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# HARVARD UNIVERSITY.

A BRIEF STATEMENT OF WHAT HARVARD UNIVERSITY IS,  
HOW IT MAY BE ENTERED AND HOW ITS  
DEGREES MAY BE OBTAINED.

By FRANK BOLLES,  
SECRETARY OF HARVARD UNIVERSITY

*SECOND ANNUAL EDITION.*

CAMBRIDGE, MASS.  
PUBLISHED BY THE UNIVERSITY.  
1892.

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# PREFATORY NOTE.

This descriptive statement is designed to answer, in a less formal way than the annual Catalogue answers them, many of the questions which the intelligent public ask concerning Harvard University and its ways and means.

FRANK BOLLES.

CAMBRIDGE, February, 1892.

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## HARVARD UNIVERSITY.

A BRIEF STATEMENT OF WHAT HARVARD UNIVERSITY IS, HOW IT MAY  
BE ENTERED, AND HOW ITS DEGREES MAY BE OBTAINED.

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Harvard College is the oldest of American institutions of learning, having been founded in 1636. What is now known as Harvard University includes the College, the Scientific School, the Graduate School, and six Professional Schools.

The College, Graduate School, and the Divinity, Law, and Scientific Schools are situated in Cambridge, Massachusetts, a city of over 70,000 inhabitants. The Medical School, the Dental School, the School of Veterinary Medicine, and the Bussey Institution (a school of Agriculture and Horticulture) are situated in Boston, a city of about 450,000 inhabitants. The two cities are connected by steam, electric, and horse railways, and are separated by the Charles River. The distance from the College buildings to the business centre of Boston is three miles.

The University is governed primarily by two Boards, the Corporation and the Overseers. The Corporation (of which the legal title is the President and Fellows of Harvard College) consists of the President, Treasurer, and five Fellows, all of whom hold office for life. In it is vested the title to the property of the University, estimated to be worth between eleven and twelve million dollars. The Overseers number thirty-two, including the President and Treasurer of the University, who are *ex officio* members. Five of the Overseers go out of office each year, their places being filled on Commencement Day by an election in which alumni of the College of five years standing, Masters of Arts, and holders of honorary degrees from the University are entitled to vote, if present in person.

The principal administrative officers of the University are the President, the Treasurer, the Deans of the various Faculties, Schools, and Administrative Boards; the Bursar, and the Secretary. The President is the presiding officer of the Corporation and of each of the Faculties, and he exercises a general superintendence over all the manifold concerns of the institution. The Treasurer is the custodian of the property of the University, makes its investments, and keeps its financial accounts. The Deans conduct the business of their several Faculties or Administrative Boards. The Bursar is

the Treasurer's agent in dealing with students in renting rooms, settling term bills, and similar matters. The Secretary conducts the correspondence of the University.

The College, Scientific School, and Graduate School are under the control of the Faculty of Arts and Sciences, from which are appointed three executive committees, called Administrative Boards, each of which has its Dean, and by which the College, the Scientific School, and the Graduate School are severally governed.

Each Professional School has a separate Faculty, composed of all its professors and other teachers holding appointments for more than one year.

The degrees conferred by the various departments are eleven in number, as follows:—

By the Faculty of Arts and Sciences: Bachelor of Arts, Bachelor of Science, Master of Arts, Doctor of Philosophy, and Doctor of Science.

By the Faculty of the Divinity School: Bachelor of Divinity.

By the Faculty of the Law School: Bachelor of Laws.

By the Faculty of the Medical School: Doctor of Medicine.

By the Faculty of the Dental School: Doctor of Dental Medicine.

By the Faculty of the Veterinary School: Doctor of Veterinary Medicine.

By the Faculty of the Bussey Institution: Bachelor of Agricultural Science.

The degree of Master of Arts is given with the professional degree to graduates with high credit of the Divinity, Law, and Medical Schools who are also graduates of Harvard College or whose previous training has been recognized by the Faculty of Arts and Sciences as equivalent to that of a Harvard Bachelor of Arts.

The honorary degrees of Master of Arts, Doctor of Divinity, and Doctor of Laws are occasionally conferred upon eminent persons selected by the Corporation and approved by the Overseers.

The roll of graduates of the University includes the names of nearly 18,000 men, of whom about one half are supposed to be living.

The libraries of the University contain about 400,000 bound volumes and an approximately equal number of pamphlets. Students are charged no fees for the use of books. Ample endowments make it possible for teachers to have books of reference needed for the instruction of their classes purchased by the Library.

In addition to the various departments already named, the University has several other important branches which will be described subsequently. These are the Astronomical Observatory, the University Museum, including the Museum of Comparative Zoölogy and



its Natural History Laboratories, the Botanical and Mineralogical Museums, the Peabody Museum of American Archaeology and Ethnology, the Semitic Museum, the Anatomical Museum, the Botanic Garden, the Herbarium, the Arnold Arboretum, the Chemical Laboratory, the Jefferson Physical Laboratory, and the Veterinary Hospital. The Hemenway Gymnasium is for the use of the whole University. The University Chapel, seating 900 persons, is controlled by the Preachers to the University, who are ordained ministers representing different Protestant denominations. The Harvard Dining Association, occupying the great dining hall in Memorial Hall, is a voluntary association which provides about 1000 officers and students with a good quality of board at cost price, usually about \$4 a week. The Harvard Coöperative Society is a voluntary association of officers and students which supplies members of the University with books, stationers' materials, fancy articles, men's furnishing goods, and a great variety of miscellaneous articles. Its annual sales amount to over \$70,000. The Foxcroft Club is a third association of a coöperative character composed largely of students living at home or at a distance from the College buildings. It has study rooms, lunch rooms, a consulting library, and other conveniences adapted to the needs of non-resident students. Meals are supplied at cost by the card, and the average expenditure per man is less than three dollars a week. These three associations are managed by boards of directors chosen by ballot from among the officers and students of the various departments of the University. There is also a Loan-Furniture Association, managed by officers and students, which lends students sets of furniture at a price just sufficient to replace the association property as it is worn out.

The University owns in Cambridge twelve dormitories or halls. These have accommodations for 973 students, provided all double rooms are occupied by two persons. As a matter of fact the number of double rooms held by students preferring to lodge alone is large. Rents range from \$25 to \$350 a year. Full information regarding prices and the methods of securing rooms can be obtained from the Bursar. There are a number of large private dormitories adjoining the College grounds, and students are received as lodgers or boarders in many private houses in various parts of Cambridge, Boston, and suburban towns. Furnished rooms, suitable for either one or two persons, are obtainable at a distance from the College Yard at low rents, as for example from \$35 to \$75 a year. Good order is maintained in College and private dormitories by graduates or instructors holding appointments as Proctors. Proctors are under the direction of the Regent. At the discretion of the Regent, a Proc-

tor may be placed in any private house where students lodge, if the maintenance of good order in the house seems to require it.

The athletic sports of the University are regulated by a commission, composed of three graduates, three professors, and three students, which acts independently of any Faculty. The sports include rowing, canoeing, base-ball, foot-ball, lacrosse, lawn-tennis, cricket, polo, rifle-shooting, hare and hounds races; track athletics, including bicycle racing, running and jumping; and gymnasium exercises of various kinds, which are under the general supervision of Dudley A. Sargent, M.D., the Director of the Gymnasium. The athletic facilities of the University are excellent. The Charles River with its miles of broad surface is only a few minutes' walk from the College. The University Boat Houses are conveniently located on its nearer bank. The foot-ball, base-ball, tennis, and other fields are in the immediate vicinity of the Gymnasium, the Fives Courts, and the Rowing Tank. The country roads around Cambridge are well made, inviting horseback and bicycle riding, driving, and walking. Skating and tobogganing are popular sports in their season, which lasts in ordinary years from December to March. The principal athletic events of the year are the championship foot-ball games in the autumn, the in-door Gymnasium contests in the winter, the championship base-ball games in the spring, and the annual boat races at New London in the early summer. Only students whose conduct and standing in College and whose physical condition are satisfactory are allowed to take part in public athletic contests or similar exhibitions. The money accounts of the various athletic organizations are under the direction of a graduate treasurer appointed by the Athletic Commission.

The University contains a great number of literary, dramatic, religious, scientific, musical, and social societies. Among the most prominent are the Union, where social and political questions of national interest are debated; the Hasty Pudding Club, founded in 1795, which has a large club-house and theatre; the Harvard branch of the Y. M. C. A.; the Total Abstinence League; the Deutscher Verein and Conference Française; the Glee Club and Pierian Sodality; and several Greek letter societies, including the Phi Beta Kappa and Alpha Delta Phi. In the Law School are several clubs which conduct Moot Courts at stated periods. The other Professional Schools have analogous societies which form useful adjuncts to classroom work.

The University itself publishes an annual Catalogue (price 85c.); the annual report of the President and Treasurer; the Quarterly Journal of Economics; the Historical Monographs; Studies in Classical Philology; the Library Bulletin; the Weekly Calendar; and vari-

ous pamphlets for general distributon. Students publish the annual Index, with records of sports and societies; the Law Review; the Advocate (bi-weekly); the Lampoon (an illustrated fortnightly); the Harvard Monthly; and the Daily Crimson. The experience obtained on these papers, especially the last-named, enables some of their editors to make successful beginnings in journalism as soon as they leave College, and to earn money during their College course by serving as correspondents for some of the city journals. Students can earn money while in Cambridge by private tutoring; singing in the College Choir and in the choirs of the neighboring churches; doing clerical or stenographic work; and type-writing. Active, energetic students, while able to live as cheaply in Cambridge as at colleges in rural districts, find not only that there are more ways of earning money, but that more is paid them for the same services. As is shown by the accompanying table, the University distributes over \$85,000 a year in scholarships, beneficiary funds, and prizes. Merit and need are the elements which determine distribution.

INCOME OF FUNDS, AND OTHER SUMS AVAILABLE IN 1890-91 IN HARVARD UNIVERSITY, AS MONEY-AIDS TO STUDENTS.

<i>Graduate School.</i>	Fellowships . . . . .	\$10,700
“ “	Scholarships . . . . .	11,150
“ “	Prizes . . . . .	1,475*
<i>Harvard College.</i>	Scholarships . . . . .	22,545
“ “	Beneficiary Funds . . . . .	19,000
“ “	Loan Funds . . . . .	3,248
“ “	Prizes . . . . .	1,055*
<i>Lawrence Scientific School.</i>	Scholarships . . . . .	2,400
<i>Divinity School.</i>	Scholarships . . . . .	1,385
“ “	Beneficiary Funds . . . . .	720
“ “	Hopkins Fund . . . . .	1,950
“ “	Williams Fund . . . . .	4,000
“ “	Williams Fellowships . . . . .	1,000
<i>Law School.</i>	Scholarships . . . . .	1,500
“ “	Prizes . . . . .	100
“ “	Foster Fund . . . . .	[150]†
<i>Medical School.</i>	Fellowships . . . . .	750
“ “	Scholarships . . . . .	1,500
“ “	Foster Fund . . . . .	150†
“ “	Prizes . . . . .	375
		<hr/> \$85,003

\* Many prizes open to graduate students are also open to undergraduates and to students in other departments.

† The income of the Foster Fund is available in the Law and Medical Schools in alternate years.

The annual outlay of an economical student who comes to Cambridge with a good supply of clothing and bed linen is necessarily nearly \$400. For tuition he must pay \$150 (except in the Divinity School, where the fee is \$50; and in the Medical School, where it is \$200). A room furnished, lighted, and warmed cannot well cost less than \$35, even if it is small and inconveniently located. Books, stationery, and laboratory fees amount to about \$20 a year; and washing to at least \$15. Wholesome food can be procured for about \$2.75 a week, although a few students live for a little less. Sundries may reach \$40 for the year, especially if by living at a distance the student spends a good deal in car fares. Allowing nothing for clothing, these estimates would make the expenses of the first year in College \$367. After that they tend to grow larger. Students who are not forced to practice strict economy of course spend more than the sums named. Perhaps a quarter of each college class live on less than \$600 a year, clothes included. Another quarter spend between \$600 and \$800. Every dollar over \$1200 which even the richest student spends is, as a wise writer on this point has said, "a dollar of danger." The same writer has said as to the advisability of encouraging poor men to come to Harvard:—

"Whenever you encounter a poor boy of eager, aggressive mind, a youth of energy, one capable of feeling the enjoyment of struggling with a multitude, of making his merit known, say to him that Harvard College is expressly constituted for such as he. Here he will find the largest provision for his needs and the clearest field for his talents. Money is a power everywhere. It is a power here; but a power of far more restricted scope than in the world at large. In this magnificent hall (Memorial Hall) rich and poor dine together daily. At the Union they debate together. At the clubs which foster special interests,—the Finance Club, the Philological Club, the Philosophical Club, the French Club, the Signet, and the O. K.,—considerations of money have no place. If the poor man is a man of muscle, the athletic organizations will welcome him; if a man skilled in words, he will be made an editor of the college papers; and if he has the powers that fit him for the place, the whole body of his class-mates will elect him Orator, Ivy Orator, Odist, or Poet, without the slightest regard to whether his purse is full or empty."

Since this was written its truth has been strikingly exemplified by the election to the class oratorship of a man who had not only worked his way into and through College, but who was of unmixed negro blood.

The following letter tells the story of a white undergraduate who

came recently from a Southern State, without a friend in Cambridge, made his way on the slenderest possible income, and graduated with distinction.

HARVARD COLLEGE, April 19, 1889.

In reply to your question I would state that my expenses for the past two college years have been as follows. I record only the *necessary* expenses.

FOR 1887-88.

Room rent, fuel, etc. . . . .	\$40.00
Board, private, 15 weeks . . . . .	52.50
“ at Memorial 24 weeks . . . . .	99.00
Clothing, including washing . . . . .	60.00
Books and stationery . . . . .	15.00
Tuition . . . . .	150.00
Laboratory fees . . . . .	25.00
	<hr/>
	441.50
Deduct for Laboratory . . . . .	25.00
	<hr/>
	\$416.50

FOR 1888-89.

Room rent, fuel, and lights . . . . .	\$40.00
Board, private . . . . .	140.00
Clothing and washing . . . . .	40.00
Books and stationery . . . . .	10.00
Tuition . . . . .	150.00
Laboratory fees . . . . .	55.00
	<hr/>
	435.00
Deduct for Laboratory . . . . .	55.00
	<hr/>
	\$380.00

I will state that I entered Harvard with but two hundred dollars a year to pay my expenses with, which is less money than I spent at the — College. The above is not an under-estimate of what I have actually spent for the items named, but so far as I am able to give, the exact figures. With the assistance I can get here, I am enabled to live better and cheaper than at the — College. I am satisfied that any good student from the South can, with the assistance offered at Harvard, live with as little cost to himself as he can at the Southern colleges.

I am yours truly, — —.

If a student in regular standing passes successfully through his first year at Harvard and proves himself to be upright in character, strong in body, and of unmistakable promise intellectually, the chances are against his being compelled to leave college on account of lack of money. When his course is finished he finds no great difficulty in obtaining a foothold in the outside world. A highly-recommended graduate of the College, or of any of the Professional Schools, as a rule finds himself given a fair chance to choose the

part of the country in which he will accept an offer to enter upon his life work. The demand for Harvard Graduates as teachers in both schools and colleges is in excess of the number of persons who can be cordially recommended by the University authorities. The same is true in various degrees of the demand for young men to enter the railway service, journalism, the publishing business, and other walks of life where a college training is of practical advantage. Every effort is made by the University to satisfy applications for the services of graduates, and every student of merit is encouraged to ask aid in securing the employment which he desires.

The following table illustrates the growth of the University during recent years : —

	1869-70.	1879-80.	1889-90.	1891-92.
No. of Professors . . . . .	41	52	71	74
“ “ Asst. Professors . . . . .	7	16	21	26
Total no. of Teachers . . . . .	81	150	217	253
Students in the College . . . . .	563	828	1,271	1,456
“ “ “ Graduate School	19	51	107	189
“ “ “ Scientific “	52	16	65	118
“ “ “ Divinity “	36	23	35	39
“ “ “ Law “	120	165	254	363
“ “ “ Medical “	306	251	290	399
“ “ “ Dental “	16	15	35	51
“ “ “ Veterinary “	—	—	20	31
“ “ “ Bussey Institution	—	7	2	14
“ “ “ Summer School	—	64	220	363
Total no. of Students* . . . . .	1,112	1,356	2,079	2,658
No. of books in the Library . .	184,000	253,000	371,000	400,000
“ “ pamphlets “ . .	110,000	199,000	300,000	310,000
Amount of aid given . . . . .	\$25,000	\$38,000	\$77,000	\$85,000

\* Not counting students in the Summer School.

## HARVARD COLLEGE.

The matters considered thus far concern the University as a whole. There are others which relate to the several departments. Of these departments the College is the oldest and largest. It has a high standard for its degree of Bachelor of Arts. Few, if any, other American colleges equal it in this particular. This fact is shown by the requirements for admission and graduation, as stated in the University Catalogue, and exemplified by the examination papers on admission requirements and on college studies. A large number of high schools and academies are quite unable to fit their pupils for Harvard College; and many of the best preparatory schools provide extra instruction for pupils intending to enter here. Finally, students coming to Harvard from another college seldom find it for their interest to enter at the same grade which they held at the college from which they came. Entrance *ad eundem* can, however, always be obtained by passing the required examinations, and it is sometimes granted without examination to students who have gone temporarily to another college and have maintained there a specially high rank.

Although the Harvard standard is thus seen to be exceptionally high, the requirements for admission are much more elastic than those which prevail in most other places. The simplest form of the requirements calls for a specified knowledge of English, Greek, Latin, German, French, history, algebra, plane geometry and physics, together with advanced preparation in two subjects chosen from the languages already named, mathematics, and physical science. But if a candidate prefers to omit either Greek or Latin, and either French or German, he may do so on condition of passing (under certain restrictions in the case of Greek or Latin) in an additional number of advanced subjects. Moreover in history he has a choice between American and English history and the history of Greece and Rome; and in physical science between elementary physics and astronomy learned from text-books only, and experimental physics learned in the laboratory. In elementary Greek, Latin, German, and French he is not tied to any particular authors, but is asked to show his ability to translate simple prose passages at sight. In English he is required to write a composition upon a subject taken from one of several specified books, most of which — if he has literary taste — he has probably read before being required to do so. For an exact statement of the existing requirements for admission

the candidate should invariably consult the University Catalogue, but the following details may serve to give an idea of what a Harvard student is expected to learn before entering College.

*Elementary Studies.*

ENGLISH. — The first part of the examination in English is based upon selected works of standard English authors. The list of books changes from year to year, the announcement of the changes being published several years in advance. The student should read the prescribed books as he reads other books; he will be expected, not to know them minutely, but to have freshly in mind their most important parts. He may be asked to write an outline of a specified novel or to explain the purport of an essay.

Whatever the subject of the composition, the examiner will regard knowledge of the book as far less important than ability to write English. The student should therefore have constant practice in writing, and should test his work severely. He should spell correctly and punctuate intelligently. He should make sure — so far as he can — that every word means something, and the right thing; that every sentence is grammatical; and that thought follows thought in logical order. He should do his best to make his work accurate in every part, and to combine the parts in a coherent whole.

The student may train himself for the correction of specimens of bad English — the second part of the examination — (*a*) by correcting his own work; (*b*) by correcting the specimens of bad English in some elementary text-book.\*

In preparation for both parts of the examination, he should study the elements of grammar and rhetoric; and should apply what he learns (*a*) to his own writing; (*b*) to specimen pages of the prescribed books.

GREEK. — The examination in Elementary Greek tests the candidate's ability to translate simple Attic prose at sight. In order to meet this requirement the candidate must possess a good practical knowledge of the forms and constructions of the language and must have command of a considerable vocabulary. The essential forms and ordinary constructions should be thoroughly mastered. From the beginning, practical use should be made of the knowledge acquired by translating Greek into English and English into Greek, first single detached sentences and then, as soon as possible, connected passages. The acquisition of a vocabulary should be system-

\* Such, for example, as *Exercises in English* by H. I. Strang. Boston: D. C. Heath & Co.



atically pursued. Important words should be daily committed to memory, not as separate units, but with regard to their affinity in form and meaning. These groups of related words will grow from lesson to lesson. In acquiring the elements of the language some such help should be resorted to as *The Beginner's Greek Book*, published by Ginn & Company, Boston, which supplies materials and indicates the method.

When the elements have been acquired, the pupil should read extensively in Xenophon, the most of whose writings are accessible in good school editions. He should be required to read aloud, and should be taught to depend, in reading, upon his own resources so far as possible. He should commit the new words that he meets to memory, and should confirm his knowledge of forms and constructions by systematic use of a grammar. He should aim to learn to read freely and with ease, but always exactly. The total amount read in preparation for the examination should not be less than three hundred or four hundred pages.

**LATIN.**—The examination in Elementary Latin demands of the candidate ability to read simple prose which he has not read before. This is the main requirement; but to enforce thoroughness and exactness in the candidate's training, questions on the ordinary forms and constructions of the language are appended to the passages set for translation. Thorough preparation for this examination requires, for the average student, a three-years course, and this is the time usually given to it; some of the best schools give even more. The student's training should be of the same general character as that recommended in Greek. The author most commonly read is Caesar; but others, such as Nepos and Quintus Curtius, may be used advantageously for supplementary reading. Pupils from the best schools have also usually read selections from Ovid or a few books of the *Aeneid* by the time they take the elementary examinations, although ability to read these authors is not required.

**GERMAN.**—A student who wishes to fit himself to pass the elementary examination in German for admission to Harvard College should first master so much of the grammar as is contained in Sheldon's "*Short Grammar*." He is advised to give especial attention from the beginning to the rules for pronunciation. The study of the Grammar should be accompanied by the careful reading of at least two hundred duodecimo pages of easy German; such as Grimm's *Fairy Tales*, or the easier stories of Heyse, Storm, and Zschokke. There are several German readers which have good selections for beginners. Among others may be mentioned: Grauert's *Reader*

(E. Steiger, New York), Joynes' Reader (D. C. Heath & Co., Boston), Whitney's Reader (Henry Holt & Co., New York). The student is advised to give himself a good deal of practice in reading "at sight"; that is to say, as soon as he has mastered a small vocabulary he should try to make out, without too constant use of the dictionary, the meaning of easy sentences which are new to him. A good book for practice in reading at sight is Leander's *Träumereien* (D. C. Heath & Co., Boston).

The one point in grammatical study which will best help the student to read at sight is a thorough mastery of all the irregular (or "strong") verbs.

**FRENCH.** — To prepare for the elementary examination in French, the student should use such books as Chardenal's first and second French courses and (in case he is working without the aid of a competent teacher) the keys to the exercises of the same. A student working without a teacher should write the exercises, then correct them with the help of the key, and write them over again a few days later without looking at the first draft. Not less than five hundred pages of French should be read. The best books to begin with are readers, such as Bôcher's French Reader, or Macmillan's Second Progressive French Reader; then easy novels and plays, such as *l'Abbé Constantin*, by Ludovic Halévy; *la Poudre aux Yeux*, and *le Voyage de M. Perrichon*, by Labiche. Excellent, as well as easy, historical reading will be provided by the Charles XII. of Voltaire. It is essential that some idea of the pronunciation should be obtained from some one fairly conversant with the French language. Gose's French-English and English-French Dictionary will be found at least as convenient as any.

**HISTORY.** — The requirement in history is intended to call for a substantial piece of work, equal to that demanded in any other subject occupying one hour on the examination programme. The books named in the Catalogue to "indicate the amount of knowledge demanded" represent the minimum of fact which a candidate is expected to master. The preparation should be such as to enable the pupil to use his facts. The "additional readings" are therefore particularly recommended, showing how to reason from facts, and the larger the amount of reading which is thoughtfully done, the greater will be the number of things which the pupil remembers because he is interested in them. The best method of instruction is to use a text-book as a guide, and to require pupils from day to day to read the "additional readings" and like works giving other accounts of the same events or institutions. Care should be taken

that pupils should remember the ideas of the books, but state them in their own words. Much may be accomplished by distributing topics among the members of the class for special preparation, the best of them to be reported to the class. In such cases the teacher should take care that every pupil masters also the general lesson. The teacher will find it useful to his pupils frequently to set them questions, so put as to make each one think about and combine for himself the facts with which he is dealing. Answers should be written. Candidates studying by themselves should read text-books and additional readings carefully, reviewing at times by taking up such compendiums as Ploetz's *Epitome*, and trying to bring together from memory the causes and results of events mentioned. The geography may be best learned by the use of outline maps, boundaries being drawn and places located from memory.

**MATHEMATICS.** — A thorough, practical acquaintance with ordinary arithmetic is assumed as underlying all preparation in Mathematics. But no examination is held in arithmetic; and students are advised not to waste their time on merely puzzling problems, which can be better solved by algebra, or on the details of commercial arithmetic. The "four rules," the operations on vulgar and decimal fractions, the simpler reductions and combinations of compound numbers, and the extraction of the square root ought, however, to be thoroughly understood, in such a manner as to be easily and accurately worked out; for these afford the necessary basis of mathematical knowledge.

The examinations in elementary algebra and plane geometry require not only accurate knowledge of those subjects, but the practical power — which can easily be gained by training — to use that knowledge in the solution of new problems and examples. Memory is indispensable here as elsewhere; but in Mathematics, its part should be as small as possible. The student should strive to attain a firm hold of the *reasons* involved in the demonstrations, solutions, constructions, rules, and methods presented to him; to remember those reasons through the force with which they are impressed on his mind; and to remember the details of his subject, because he remembers their reasons. This requires earnest, patient, concentrated study; but the habit once formed, Mathematics becomes easy, and the student can enter a mathematical examination with confidence.

The list of subjects in algebra, given in the Announcement of Requirements, should be carefully considered; and the student should not fail to cover the whole ground there specified. A large number of examples should be solved; so that the student may

learn to do his work with reasonable quickness, as well as with clearness, facility, and exactness. The examination aims to test all these qualities. The solution of tolerably complicated literal quadratics; the various methods of elimination, for equations of the first two degrees; the putting of problems, in a neat manner, into equations; the working of all the algebraic operations both for integral and for fractional expressions: — may be specially pointed out as important subjects of attention. The student should learn to arrange his work in a clear, orderly, and compact fashion. Wentworth's *Elementary Algebra* (Ginn & Co., Boston) is widely and successfully used by schools which prepare for this College. But any reputable text-book, if it is well provided with examples and covers the whole ground required, may be employed. Wentworth's *College Algebra* (same publishers), Chaps. X. and XI.; Todhunter's *Algebra* (Macmillan & Co., New York), Chaps. VI.–VIII., XIII., XVIII., XIX., XXI.–XXIV., inclusive; and Wentworth and Hill's *Exercise and Examination Manuals* (Ginn & Co.) contain good examples for practice.

In Geometry, the student should guard against committing his demonstrations and solutions to memory from his text-book. He should, so far as possible, work them out for himself, with his own diagrams, using the book as a guide, and always bearing in mind that his object is to learn a subject, not a particular author's presentation of that subject. He should make his diagrams as different from those drawn in his book as the conditions of the question allow; he should often use different lettering from the book; and sometimes try to invent proofs and solutions of his own, remembering always that the shortest and simplest methods, if rigorous, are best. This way of working will help him towards the solution of original problems, on which he should carefully prepare himself. It is an excellent practice to perform many actual constructions with the rule and compasses, according to geometric principles, and with the utmost care and finish. The student thus becomes familiar with the conditions of the possibility of a construction and with the actual use of theorems; and acquires a greater interest in his study. But he should remember that a fine drawing, however useful in its own way, has no geometric value; it is unnecessary to a sound demonstration and is powerless to redeem a faulty one. Byerly's *Chauvenet's Geometry* (Lippincott Co., Philadelphia) is to be strongly recommended as a suitable text-book; Wentworth's *Geometry* (Ginn & Co., Boston) may also be favorably mentioned; but, as in algebra, any standard treatise may be chosen. In addition to the regular text-books, Julius Petersen's "*Methods and Theories for the Solution of Problems etc.*" (Sampson Low & Co., London) may be used

with advantage by the student who has the time and inclination to make special studies in the art of geometric invention.

One third of one full year of work may be taken to represent the time devoted to the study of elementary algebra at good schools; and one fifth of a year, the time devoted to plane geometry. A capable and somewhat mature student may prepare himself satisfactorily for the examinations in decidedly less time; but, on the other hand, the student who can give more study to plane geometry especially is strongly advised to do so. A thorough mastery of either of these subjects, on which all higher study of Mathematics depends, and which contribute indirectly in an important degree to a vigorous mental training, necessarily requires time for the assimilation of the new conceptions and processes which characterize them, and for the formation of habits of exact thought.

**ELEMENTARY PHYSICS.** — Previous to 1886 the only requirement in physics for admission to Harvard College was text-book work. In that year and the year following a pamphlet was prepared by the College describing in detail a laboratory course intended as an alternative for the text-book course. A candidate for admission may therefore now offer either a text-book course or a laboratory course. The laboratory course is strongly recommended to all who can take it.

The text-book alternative is retained because the teaching of physics by laboratory methods has not yet become general in the schools of the country at large. Concerning this requirement nothing need be added to the statement of the College Catalogue, which is as follows: Astronomy (Lockyer's *Elementary Lessons*) and Physics (Avery's *Elements of Natural Philosophy*\* or Gage's *Elements of Physics*). This requirement, if fully and thoroughly met, probably imposes as much work upon the student as the laboratory alternative.

Inquiry has shown that in a considerable number of the best schools which fit for Harvard College about five school-hours per week, presumably with some hours each week out of school, for one year were devoted to physics. Accordingly, the laboratory course described in the pamphlet was planned to occupy the student, in school and out, about seven or eight hours per week for one year.

As physics is no longer a required study in college, it was borne in mind, in planning the laboratory course for the schools, that very many of those taking it would never have any other systematic course in physics. Accordingly the exercises were so chosen as to cover a

\* The following portions of the 1885 edition may be omitted: — sections I. and II. of chap. I. (excepting arts. 23-30), arts. 254-267, 346-349, 371, 411-415, 445-455, 464-467, 470-476, 707-714, 729-745, and the whole Appendix.

wide range of subjects and to have many applications in the experience of every-day life. The course at its last revision, in 1889, was arranged in forty-six exercises, any six of which may be omitted by the candidate. The examination for those who present this course consists of a written test upon questions closely connected with the work of the course, a laboratory examination, usually upon the exercises of the course, and an examination of the note-books used during the progress of the course in the schools. The written examination, though less important than the other two, and comparatively easy, gives valuable evidence as to the intelligence with which the student has carried on his work and the thoroughness with which he has mastered its principles.

Particular attention has been given to the question of pecuniary expense in the arrangement of the laboratory course, and with such success that the course is fully established in most of the schools that send many students to Harvard and is gradually making its way into smaller schools. The pamphlet describing this course is called a *Descriptive List of Elementary Physical Experiments*. It is for sale at the University Bookstore, Cambridge.

#### *Advanced Studies.*

Considerably more advanced training is also required in from two to five of the following subjects: Greek, Latin, German, French, mathematics, physics, chemistry. If Greek is omitted from among the elementary subjects, four of these advanced subjects instead of two must be offered, and they must include a considerable part of the advanced mathematics and sciences. For a precise statement of the omissions from the elementary list and the corresponding substitutions from the advanced list the student must consult the Catalogue.

There are many schools which are not prepared to furnish even their best and most ambitious pupils with all the training which these requirements demand; nevertheless the number of schools and small colleges which fit students for Harvard College is large, as will be seen by consulting the Appendix, and might be much larger if pupils and their parents insisted upon having school facilities increased in localities where incompetent teachers and meagre expenditures are not necessary evils. The best fitting schools for Harvard College are those which the table in the Appendix shows to have prepared the largest number of successful candidates in recent years.

It does not necessarily follow because a candidate for admission has been poorly prepared in one or two subjects, owing to lack of

competent instruction, that he cannot enter Harvard. If, by passing creditably in the subjects in which he has been trained, he clearly shows capacity and ambition, he will be admitted on condition of subsequently making up his deficiency. The number of subjects in which he may be conditioned varies according to the circumstances, but does not usually exceed three. After entering College he is allowed to cancel these conditions, either by passing examinations on the same subjects or by taking as a part of his college studies advanced work in the same department, the satisfactory performance of which proves that he has more than made good his previous defects. The exact number of conditions allowed can never be stated in advance for the reason that each case is considered on its merits.

It frequently happens that students who do not feel that they can devote four years to college study as candidates for the degree of A.B. desire to pursue special work leading to some chosen goal. Such persons can obtain instruction at Harvard by entering as special students. Before the opening of the college year an applicant files with the Secretary a written application in which his previous training and future plans are outlined; and he accompanies this with letters from teachers and friends testifying to his character and capacity. These papers are read by a committee of the Faculty, and if found satisfactory the candidate is allowed to register as a Special Student and to begin work in such courses as he may select with the approval of his advisers. If his subsequent conduct shows that he is either not studious or of doubtful character, he is deprived of the privileges of the University.

The process of admission to regular standing and recognized candidacy for a degree is more complicated. Most students prefer to divide their admission examination into two parts, taking one part in one year and the remainder the next. Sometimes they take one part in June and the other in September. Under no circumstances are they allowed to divide their examinations into more than two such parts. Where the division is between two years, the first part is called the Preliminary Examination. In order to be recognized as a preliminary candidate a student must send to the Secretary a clear and explicit statement from the head-master of his school, expressing the master's belief that the student is properly prepared to take certain preliminary examinations which the certificate must specify. Until this certificate is received by the Secretary the candidate is not entitled to enter the examination. Of course this does not prevent students of limited opportunities from "offering themselves" in cases where they are in fact preparing themselves for college; but

in such cases the candidate must state that he is his own teacher and send an exact list of the studies in which he believes himself prepared to undergo examination.

The second set of examinations of a candidate who divides between two years is called the "Finals." It may follow the "Preliminaries" after an interval of a year, a year and three months, or even two or more years. Where all the examinations are offered in the same year, whether part in June or part in September or all at once, they also are called "Finals" for the reason that each examination taken, whether in June or September, is the final effort of the candidate to pass in that particular subject. Candidates for the "Finals" are not required to present certificates of preparation. The penalty for trying all the examinations in one year, when preparation has been insufficient and when such insufficiency is proved by failure, is that the candidate obtains no certificate for the subjects passed and is compelled to take the entire examination over again. The knowledge of the penalty is usually sufficient to prevent incompetent persons from undertaking the examinations all at once against their teachers' advice. The only certificate required of a final candidate is one of good moral character. This should always come from the principal of his school, or, if he has not had a regular school training, from a clergyman or other responsible person well known in the locality where he resides. If a student cannot show that he is trusted and respected in his school and home, he is not desired in Harvard College. Any attempt to force a person of tainted character into the midst of the University community is considered to be an act deserving the strongest condemnation.

The June examinations for admission to Harvard are held simultaneously in Cambridge and other points in New England; in New York, Albany, and Buffalo; in Philadelphia, Washington, Cincinnati, Cleveland, Chicago, St. Louis, Minneapolis, Denver, San Francisco, Portland, Oregon; Tokyo, and some accessible city in Europe. An examination will ordinarily be held at any other point distant from those named, if ten candidates apply for it as early as April 1. In order to enable the College to know how many candidates are to be provided for at each of the regular places of examination, notice of intention to take examinations in places outside of Cambridge must be sent to the Secretary in time to reach him by June 11th. If the examinations are taken in Cambridge, no fee is charged; but, if taken elsewhere, payment of \$5 is required to be made to the Bursar as early as June 11th. The payment should be made by check or money-order drawn to the order of the



Bursar. Money should not be trusted to the mail. The check should be sent to the Bursar direct and not under cover to any other officer. One fee covers both "Preliminaries" and "Finals" and the two sets of examinations need not be taken in the same place. Full details regarding the examinations, including sets of papers used in previous years, are furnished by the Secretary on request.

A candidate for admission to Harvard by the usual process of examination will find no difficulty in taking his examinations, provided he notes with reasonable care the directions given him by the officers in charge. There is no need for any well-prepared candidate to feel nervous or timid. He is one of hundreds passing through the same ordeal, all equally new to the situation which challenges their courage. If he is really prepared to enter College, the College is quite ready to admit him. The examination-books will be read and passed upon in ignorance of his identity, and the utmost impartiality will be shown in judging his efforts at each stage of his progress. Honesty in examinations is unquestionably the rule at Harvard. Opportunities to "crib" are few; public opinion is against cheating of any kind; and dishonesty, if detected, deprives the candidate of the chance to enter College.

Information regarding the results of the June examinations is given to final candidates within a day or two after the close of the examinations and to preliminary candidates about ten days later. The autumn examinations are over several days before College opens, so that persons admitted then have time to get settled before attendance at lectures begins. Admission or preliminary certificates are as good one or more years after date as when issued, but delay in entering College is not favored.

Mention has already been made of admission to advanced standing in the college classes. This may be obtained by examination or through recognition of work well done at another college. The usual process where a student at another college wishes to be transferred to Harvard, is for him to fill out a blank furnished by the Secretary, stating in detail all his previous work in fitting for college and after entering it. This he supports by certificates and rank-lists showing his class-standing, and forwards them through the Secretary to the Committee on Admission from other Colleges. After allowing full credit for all his work as measured by Harvard standards, this Committee decides in which of the four college classes the candidate belongs. It occasionally, though rarely, happens that students coming from the same class at home are admitted to different standings in Harvard College, owing to marked difference in their scholarship or preparatory training. Any student of limited means and high

scholarship who is transferred by the recommendation of his teachers from another college to Harvard, is likely to receive favorable answer to an application for aid from the Price Greenleaf fund. His application must be filed before May 1. The amount given varies from \$150 to \$250. Applications for admission to advanced standing are promptly considered at any time in the year, summer included. During the past nine years over 325 students from other colleges have entered the undergraduate classes in Harvard College. They have come from the following institutions — one hundred and eleven in number : —

Acadia,	Georgetown,	St. Lawrence,
Adelbert,	Grinnell,	St. Stephen's,
Albion,	Grove City,	Simpson,
Amherst,	Hamilton,	South Carolina,
Andover Theol. Semi-	Hamline,	Southwestern Presbyterian,
nary,	Haverford,	Stevens Inst. of Technol.,
Atlanta,	Hillsdale,	Swarthmore,
Augustana,	Hobart,	Syracuse,
Beloit,	Holy Cross,	Trinity,
Bethany,	Howard College (Ala.),	Tufts,
Blackburn,	Howard University,	Tulane,
Boston College,	Illinois State Normal,	Union Theol. Seminary,
Boston University,	Illinois Wesleyan,	University of Alabama,
Bowdoin,	Iowa State University,	“ “ California,
Bridgewater State Nor-	Kenyon,	“ “ Georgia,
mal,	Knox,	“ “ Indiana,
Brooklyn Polytechnic In-	Lafayette,	“ “ Kansas,
stitute,	Lawrence,	“ “ Michigan,
Brown,	Lebanon Valley,	“ “ Missouri,
Bucknell,	London,	“ “ New Bruns-
Cambridge Epis. Theol.	Malison,	wick,
School,	Marietta,	“ “ North Caro-
Carleton,	Mass. Institute of Tech-	lina,
Charleston,	nology,	“ “ Oregon,
Colby,	Millersville State Normal,	“ “ Pennsylvania,
College of the City of	Mt. Allison,	“ “ Vermont,
New York,	National Normal Univer-	“ “ Virginia,
Columbia,	sity (Lebanon, Ohio),	“ “ Wisconsin,
Columbian,	Northern Indiana Nor-	U. S. Naval Academy,
Cornell (N.Y.),	mal,	Vanderbilt,
Cornell (Iowa),	Northwestern,	Wartburg,
Dalhousie,	Oberlin,	Washington,
Dartmouth,	Ohio State University,	Washington and Jefferson,
Denison,	Ohio Wesleyan, &	Wesleyan,
Drury,	Otterbein,	Williams,
Eminence,	Princeton,	Wittenberg,
Emporia,	Racine,	Wooster,
Eureka,	Ripon,	Worcester Polytechnic In-
Fisk,	Roanoke,	stitute,
Frankfurt Gymnasium,	Rochester,	Yale.
Geneseo State Normal,	St. Francis,	

A graduate of another college who wishes to take the degree of Bachelor of Arts at Harvard College may register either as an undergraduate or as a member of the Graduate School. The same courses of instruction are open to him in either case and the requirements imposed for the degree will be the same.

Students entering with advanced standing are enabled by special provisions in the Regulations to compete for degrees with distinction and for Honors.

The college year opens on the Thursday following the last Wednesday in September. On entering College every Freshman and Special Student finds himself assigned to some member of the Faculty who acts as his adviser in the selection of his studies and in other matters relating to his new life. The student deposits with the Bursar either a bond signed by two satisfactory sureties or a sum of money sufficient to cover his immediate future liabilities; he secures a seat at Memorial Hall, or in some other boarding-place; registers in the morning of the first day of the term, and enrolls himself in the classes of the professors with whom he is to take courses. Thenceforward his duties are clear. They are, however, looked upon by the University as duties to himself and his parents, rather than to the College. Every student is at the outset presumed to have come to Cambridge for the purpose of gaining an education. If he seems to be in danger of forgetting this he is warned; later, admonished and a letter sent to his home; then, if the presumption of good purpose is negatived by conclusive evidence of his unfitness to care for himself, he is placed on probation, cut off from many privileges and honors, and informed that any further neglect of work will result in his ceasing to be a member of the University. Students who reach the point of being sent away are, as a rule, manifestly unfit for college life. In the rare cases of actual misconduct, the penalties of suspension, dismissal, and expulsion are enforced.

The work of the Freshman year consists of sixteen hours a week of lectures and recitations, not counting any laboratory or field work which may be taken. Most of the courses of study begin in September and continue till June. Some end in February and are complementary to other half-courses beginning then and continuing till June. The year is not divided into terms or semesters, but is a unit in itself. Consequently entering College in the middle of the year is unadvisable, and is rarely allowed candidates for a degree. The work of the three later years of the college course consists of twelve hours of lectures each week with a steadily-increasing amount of laboratory work, thesis writing, and outside reading and research. By special

consent of the Faculty a considerable number of students do the work of four years in three. Such persons are usually above the average in age and attainments and are apt to be of limited means. Of the eighteen courses of study required for the degree of A.B. only two are prescribed. The remaining sixteen are elective and are chosen from among the two hundred and fifty or more courses offered by the Faculty of Arts and Sciences. Of these about fifty are open to election by Freshmen. The departments in which instruction is given are Semitic and Indo-Iranian languages, Classics, Modern Languages and Literatures, Philosophy, Political Economy, History, Fine Arts, Music, Mathematics, Civil, Topographical and Electrical Engineering, Physics, Chemistry, Botany, Zoölogy, Geology, and American Archaeology. While in one sense an upper-classman may elect any of these courses, it is usually the case that his previous training has fitted him to take only a limited number of them, the advanced and technical courses in each department requiring careful elementary training to be pursued successfully. The Annual Announcement of Courses of Instruction commonly known as the "Elective Pamphlet," and descriptive pamphlets of the various departments, are issued in May of each year, and contain detailed information regarding these courses. They may be obtained at any time upon application to the Secretary. During the year instructors in the various courses of study submit their students to frequent tests to ascertain whether they are pursuing their work systematically. In all, except laboratory courses or others affording constant intercourse between instructors and students, a written examination lasting an hour is the commonest form of test. Early in February the mid-year examinations are held, continuing for a fortnight. Each examination lasts three hours and covers the work done during the first half-year. In June, at the close of the year, the final examinations are held. They are similar in character to the "mid-years," both being written examinations.

After the final examinations Instructors return grades based upon the student's work for the year and these grades determine whether students are promoted or "dropped." A "dropped" student is, under the rules, on probation at the opening of the next Academic year, and is sometimes obliged to report daily to a tutor or officer of the University until his period of probation is over. The results of the year's work are made known during the summer by printed rank-lists containing the names of the high scholars in each course, and by private letters, stating the low grades.

President Eliot, in his Annual Report for the year 1888-89, made the following statement regarding "dropping":

"There is a common impression among ill-informed people that

Harvard College, although hard to get into, is easy to stay in. How erroneous this impression is may be seen every year in the figures published in the Dean's annual report concerning the changes in the *personnel* of the successive College classes. Thus in October, 1888, it appears from the Dean's statistics for the year 1888-89 (p. 39) that the Freshman, Sophomore, and Junior classes numbered together 825 persons, and that of this number 57 left College at or before the end of the year, and 42 were dropped to a lower class. In other words, it appears that one person in nine failed to maintain his place in the College. The majority of those who leave College altogether withdraw voluntarily; but they do so because they become satisfied after trial that they have not health or capacity enough to meet the demands of the College, or, if they are poor, that their chances of success in College work are too slight to warrant them in incurring debt. The Dean points out with satisfaction that while 42 students were dropped in 1888-89, 34 students who had been dropped in former years succeeded in making good the deficiencies which had caused them to be dropped. The success of College discipline is to be best judged, not by the number of the lost, but by the number of the redeemed."

Immediately after the final examinations in June comes the Seniors' Class-Day and a few days later Commencement, when the many graduates of the College and Professional Schools receive their diplomas at the hands of the President.

Class-Day is the gala day of the Seniors, and thousands of guests gathered from various parts of the country enjoy its varied programme. The Class-Day officers are chosen by ballot at a full meeting of the class held in the October previous. The Commencement-Day speakers are appointed on account of high scholarship, the merit of their parts, and their method of delivering them.

The degree of Bachelor of Arts is given in four grades, the degree without distinction, the degree *cum laude*, *magna cum laude*, and *summa cum laude*. Remarkable excellence in any department secures the graduate Honors or Highest Honors. A lower grade of excellence is rewarded by Honorable Mention in the favorite subject. All students whose records at the close of the Junior year indicate that they will probably receive a degree with distinction are entitled to write Commencement Parts in competition for the honor of being chosen to deliver them. By winning honors in any department a degree with distinction is secured, but the more common ground of a degree with distinction is general excellence in the entire work of the four years.

## THE SCIENTIFIC SCHOOL.

The Lawrence Scientific School is situated in Cambridge in close proximity to the College Yard and dormitories, Memorial Hall, the Observatory, the principal laboratories and museums. The School presents seven thoroughly equipped departments of study, in any one of which a student may become a candidate for the degree of S.B. These departments are as follows: Civil and Topographical Engineering, Electrical Engineering, Chemistry, Geology, Biology, Anatomy, Physiology and Physical Culture, and a course in General Science. As the instruction given in the School is open to the students of the College — hundreds of whom are allowed to make scientific work the basis of their course for the degree of Bachelor of Arts — the number of candidates for the degree of Bachelor of Science affords no indication of the number of students actually engaged in scientific study. Instructors of various grades employed by the School have their headquarters in the laboratories and museums, the Botanic Garden, the Herbarium, and other centres of scientific work. The admission requirements are fewer than those of the College and consist of the following subjects: history, algebra, plane geometry, logarithms, plane trigonometry with its applications to surveying and navigation, physical science, French or German, and English. If the candidate is to enter the course in Civil Engineering, he must pass admission examinations — in addition to those just named — in solid geometry or the elements of analytical geometry. The admission examinations are held at the same times and places as those of the College. The School admits to advanced standing, without examination, on proof of high scholarship elsewhere. The School has in its gift sixteen scholarships of an annual value of \$150 each. Eight of these scholarships are assignable to graduates of reputable Normal Schools in the United States. The incumbents are appointed in the first instance upon the recommendation of the principals of the schools from which they come. Scientific School students have the same rights in the dining clubs, dormitories, gymnasium, athletic fields, and other conveniences of the University which college undergraduates enjoy. They may take courses in other departments of the University without extra charge. Special Students are admitted to the School in much the same way and upon the same terms that Special Students are admitted to the College.

## THE GRADUATE SCHOOL.

A graduate of any college or scientific school of good standing is admitted to the Graduate School on presentation of his diploma or some equally satisfactory certificate of graduation. Members of this department are not necessarily candidates for any degree; but they may become candidates for the degree of A.M., Ph.D., or S.D., by permission of the Administrative Board of the School. Under certain circumstances, explained below, they may become candidates for the degree of A.B. They may pursue any of the courses of study offered in the department of Arts and Sciences, and may also take any of the studies offered in the Professional Schools. The choice of studies of each student must be approved by the Administrative Board of the School; but any reasonable selection of studies suitable to the student's attainments is always approved. A student who means to present himself for a degree, or one who holds a fellowship or scholarship, is expected to do full work; and this requirement is ordinarily interpreted to mean that he must take in each year the equivalent of four courses of study of advanced grade. Other students may take a smaller number of courses, and devote a part of their time to other pursuits. If a student in the Graduate School, who is not a graduate of Harvard College or of the Lawrence Scientific School, wishes to become a candidate for a degree, he must first apply to the Committee of the Faculty on Admission from other Colleges for a statement of the conditions under which he can receive the degree for which he wishes to become a candidate.

Persons who have never received any academic degree are permitted to register in the Graduate School, if in the judgment of the Administrative Board they are of suitable age and attainments. If of lower standing in these respects, they may be admitted to one of the undergraduate classes or to the list of Special Students in the College or the Scientific School. Those admitted to the Graduate School must be men of high scholarship, who are fully competent to engage in advanced studies. They cannot become candidates for one of the higher degrees unless they show that they have fulfilled all the substantial requirements for the degree of A.B. or S.B.

If any student wishes to become a candidate for a degree, his course of study must be approved as suitable for a student having that intention. In April of each year members of the Graduate School are called upon to state definitely whether they wish to be candidates for a degree in the following June. Persons whose previous course of study has been accepted, without special conditions, as qualifying them to be

candidates for the degree of A.M., are admitted to that degree on passing with high credit in four advanced courses of study, or their equivalent, provided they have been in continuous residence during at least one academic year. The degree of A.B. is often conferred upon members of the Graduate School who are not already graduates of Harvard College, and whose previous training does not fit them to become candidates for the degree of A.M. in their first year of residence. At least two years of residence are required of candidates for the degree of Ph.D. or S.D. The only variation from this rule is in the case of graduates of Harvard College or of the Scientific School who study in part outside of Cambridge under guidance of members of the Faculty. For them one of the two years of residence, but not of systematic work, is sometimes remitted on the ground of their previous residence. Every candidate for the degree of S.D. (except such as hold the two degrees of A.B. and S.B. from this University) is compelled to devote a third year to study or research, but it need not be spent in Cambridge. The degree of Ph.D. or S.D. is not given to every candidate who studies faithfully the required number of years or in fulfilment of a determinate programme. A thesis showing original treatment of an approved subject, or giving evidence of independent research, and thorough examinations on a broad and connected field of study, are the final tests of the candidate's fitness to receive one of these significant and valued degrees. If by these tests he is found wanting, his term of study must be prolonged or his hopes of attaining the degree relinquished. Detailed statements regarding the requirements for the degrees of A.M., Ph.D., and S.D. are to be found in the Graduate School pamphlet, which can be obtained on application to the Secretary.

During the years from 1880 to 1890, students from 78 different American and foreign colleges and universities were admitted to the Graduate School. During the present year 59 institutions are represented in the School.

The aggregate annual value of the fellowships and scholarships assignable to students in the Graduate School is \$21,850. Details regarding these aids will be found in the Graduate School pamphlet. They must be applied for before March 31. Applications from persons not already members of the University should be accompanied by testimonials from instructors, original publications, and any similar material which will supply evidence of the candidate's fitness for appointment. No preference is given to graduates of Harvard University except in a few cases where such preference is required by the terms of the foundation of the fellowship or scholarship. In some



cases the preference is given to persons not graduates of Harvard University, or who have first been graduated at some other college.

In order that any year in the Graduate School may be counted as a year of residence, registration should take place as early as the last Thursday in September, at the opening of the academic year. But students are admitted to the Graduate School at any time in the year; the conditions of their registration being fixed in each case by the Administrative Board.

The Graduate School has recently been reorganized under the Faculty of Arts and Sciences in such a manner as to bring it forward as an important department from the point of view of liberal learning, and to put it in relations of mutual support with the College and Scientific School, so that it will now enjoy, far more satisfactorily than heretofore, its full share of the attention of the instructors and of the life of the University. The opportunities for advanced study which it offers should be carefully considered by persons who desire to carry their scholarship beyond the point reached by the college graduate. Young men who are looking to careers as teachers, journalists, writers, economists, and legislators, or in any other literary or purely scientific profession, ought, if possible, to devote a year or two to systematic study in such higher fields of learning as they wish to qualify themselves to cultivate in the best manner. It is no longer true that a mere college education is enough in this country to prepare a man for good, intellectual work in his generation, without some higher and more special training. The Graduate School may be regarded as the professional department for the literary and purely scientific professions; and the growth of its numbers in the past few years indicates that it is beginning to take its proper place, from that point of view, in the general estimation.

All the privileges of students in the University are open to a member of the Graduate School. He may, under suitable and liberal conditions, enjoy the use of the various libraries, laboratories, and museums of the University; he may take courses in any of its departments without extra payment; he may attend its public lectures and readings; he may use the Gymnasium and Athletic Grounds; he may be admitted to the Dining Hall, the Foxcroft Club, etc.; he may obtain a college room; he may be elected into the students' societies and the departmental clubs; he may gain access to valuable libraries and collections in the neighborhood of the University. If a zealous and competent student, he will find every provision made for his advancement which the ample resources of the University permit.

## THE DIVINITY SCHOOL.

The Harvard Divinity School is non-sectarian, its Constitution prescribing that "every encouragement be given to the serious, impartial, and unbiased investigation of Christian truth, and that no assent to the peculiarities of any denomination of Christians shall be required either of the instructors or students." The Baptist, Congregational and Unitarian denominations are represented in its Faculty. It admits to its classes as candidates for the degree of D.B. only persons who have received the degree of A.B., or who satisfy the Faculty that their education has been equal to that of graduates of the best New England colleges. Persons not candidates for the degree of D.B. may be admitted as special students on examination in Latin and Greek. Students can be admitted to advanced standing only on examination, except that graduates of other theological schools who have received the degree of A.B. and who bring evidence of high standing, may be admitted to the Senior class without examination. Graduates of other theological schools, not candidates for the degree of D.B., may be admitted as resident graduates. Such students are encouraged to do independent work in any department of theological study and may take part in any of the exercises of the School. The degree of D.B. is given to successful candidates after a residence of three years, to which a year of post-graduate study may be added. The instruction of the School includes courses in Hebrew, Jewish and Classical Aramaic, The History of Israel both Political and Religious, New Testament Introduction, Criticism and Interpretation, Church History and the History of Doctrine, The Philosophy of Religion, Systematic Theology, Comparative Religion, The Ethics of Social Reform, Homiletics, Pastoral Care, and Elocution. Its studies are to some extent elective, about fifty percent more hours of class-work being offered than are required for the degree. Students, except special students, may take courses in other departments of the University without charge. The School is amply endowed with scholarships and other beneficiary funds, the income of which is assigned to graduate and other students without regard to denominational differences. A certain grade of scholarship must, however, be reached in order that such help may be received. Its students have included since 1885 graduates of the following 56 colleges and 22 schools of theology. Those marked with an asterisk are represented in the School the current year, 1891-92.

## COLLEGES.

Alleghany,	Iowa,	Trinity (Conn.),
Amherst,	Johns Hopkins,	*Trinity (N. C.),
*Antioch,	*Knox,	Tufts,
Bates,	Lebanon Valley,	University of Chicago,
*Boston University,	London University,	“ “ Georgia,
*Bowdoin,	McGill,	“ “ *Indiana,
Brown,	*Maine State,	“ “ Kansas,
Canton,	Mt. Allison,	“ “ *Michigan,
*City of New York,	Mt. Union,	“ “ *Nebraska,
*Colby,	*Oberlin,	“ “ N. Carolina,
Columbia,	*Ohio State,	“ “ Vermont,
*Dalhousie,	Olivet,	“ “ Washington,
*Doshisha (Japan),	Ottawa,	“ “ *Wisconsin,
Denver,	Owens.	Washington University
De Pauw,	Pennsylvania,	(Missouri),
*Harvard,	*Princeton,	Western,
*Haverford,	Racine,	Williams,
Hillsdale,	*St. Francis Xavier,	Wooster,
Illinois Wesleyan,	St. Stephen's,	Yale,

## THEOLOGICAL SEMINARIES.

Andover,	*Halifax,	Princeton,
*Bangor,	Hillsdale,	South Baptist,
Boston,	*Meadville,	Tufts,
*Cambridge Episcopal,	Methodist College,	Union,
Canton,	Belfast (Ireland),	Western,
*Chicago Baptist,	Newton,	*Yale.
*Doshisha (Japan),	*Oberlin,	
*General Theo. Seminary,	*Pacific Theo. Seminary,	

For several years the number of resident graduate students in the School has been increasing. The wide range of studies offered by the School, the privilege of attending courses in other departments of the University without extra charge, the opportunities to secure ample pecuniary aid, and the fact that men of all creeds meet in this School on equal terms, animated by a single purpose, are causes which effectively combine to stimulate this increase. The tuition fee charged in the School is \$50, or only one third of the fee charged under the Faculty of Arts and Sciences. The two Williams Fellowships of \$500 each, open to resident graduate students in the School, are among the most effective aids to advanced theological work in this country. They may be held by distinguished graduates of any school of Theology who intend to enter the Christian ministry.

## THE LAW SCHOOL.

The course for the degree of Bachelor of Laws is three years in length. Instruction is given in the following subjects: Torts, Criminal Law, Contracts, Real Property, Common Law Pleading, Equity Pleading and Jurisdiction, Bills and Notes, Evidence, Sales, Trusts, Agency, Carriers, Partnership, Corporations, Suretyship and Mortgage, Patent Law, Constitutional Law, Massachusetts Law and Practice. The method of instruction applied in the School is singularly effective. Principles are learned not by memorizing the pages of text-books, but by analyzing leading English and American cases which include in their decisions and dicta the living body of the law. A student of ability who spends three years of intelligent effort in the School is equipped, except in one particular, for active professional labor in any part of the Union. The exception is the practice and statute law of his own State, but his familiarity with the fundamental principles of law makes the task of mastering local practice comparatively easy. Honor graduates of the School are certain to receive invitations to enter leading Law offices in various parts of the country. During the ten years from 1880 to 1890, 475 graduates of Harvard and 249 graduates of other colleges attended the School. To gain admission to candidacy for the degree of LL.B. a student is required, on entering, either to show that he is a graduate of a college or scientific school of good standing, or to pass creditable examinations in Blackstone's Commentaries and in either Latin, French, or German. Special students are required to meet the same tests. A limited number of scholarships are assigned each year to needy students of at least one year's standing whose rank seems to justify giving them assistance.

The most promising students of each class are elected members of the Law Clubs, several of which have been in existence in the School for many years, and include in their lists of former members jurists of national and local reputation. These clubs are most useful auxiliaries to regular work, requiring their members to prepare and argue each week cases illustrating the most difficult problems under discussion in the lecture-rooms. The members of the Faculty and other instructors, nine in number, reside near the School and almost without exception devote their entire time to the work of the School and the personal needs of the students. The regular course of study

for the degree of LL.B. calls for ten hours a week in the lecture-rooms during the first year, ten during the second, and eight during the third. For the Honor degree ten hours are required in the third year. The average student of merit works seven or eight hours a day in the School including his lecture hours. Examinations are held in June on the work of the year. Only students of great promise are admitted to the Honor degree.

At least two full years of residence are required of every candidate for the degree. Sometimes students pass advanced-standing examinations and enter at the beginning of the second year. Sometimes they omit residence in the second year—taking the examinations, however, at the usual time—and sometimes they leave the School at the end of the second year and return to take the third-year examinations at the end of that year. Graduates of Harvard or of other colleges who have had their degrees approved by the Faculty of Arts and Sciences, and who are not candidates for the degree of LL.B., may obtain the degree of Master of Arts after one year's satisfactory study in the School, or may take a part of their work in the School and the remainder in the Graduate School.

Up to July, 1891, 2376 persons had been graduated from the Law School. Austin Hall, first occupied by the School in 1883, is architecturally one of the most satisfactory buildings in Cambridge.

The following table exhibits the attendance at the School during the last twenty-one years:—

Year.	Whole no. of students.	No. present during the whole year.	No. present only part of the year.	Average number.
1870-71	165	107	58	136
1871-72	138	107	31	123
1872-73	117	109	8	113
1873-74	141	121	20	131
1874-75	144	130	14	137
1875-76	173	153	20	163
1876-77	199	168	31	184
1877-78	196	172	24	183
1878-79	169	137	32	154
1879-80	177	138	39	157
1880-81	161	136	25	149
1881-82	161	139	22	146
1882-83	138	120	18	129
1883-84	150	130	20	140
1884-85	156	139	17	148
1885-86	158	142	16	151
1886-87	188	160	28	174
1887-88	225	197	28	211
1888-89	225	198	27	212
1889-90	262	229	33	245
1890-91	285	255	30	272

## THE MEDICAL SCHOOL.

The Harvard Medical School is situated on Boylston Street, Boston, in a building completed in 1883 at a total cost, including land, of \$321,415.62. The Sears Laboratories of Pathology and Bacteriology, completed in 1890 at a cost of \$35,000, are connected with the School building. The Medical department is the largest of the professional schools of the University and one of the oldest, having given degrees since 1788. In all it has graduated 3180 persons. At present it gives the degree of M.D. after either three or four years of successful study and examination. After the beginning of the academic year 1892-93, the required course of study will be a graded course covering four years. Graduates of colleges, scientific schools, or medical schools are admitted to the School without examination. Non-graduates are required to pass in the following subjects: English, Latin, physics, and also in either French, German, algebra, plane geometry, or botany.

The standard of the School is high, its examinations are severe, and its facilities of all kinds great. The Boston hospitals, noted for their model administration, are in close sympathy with the School, and draw upon its best graduates for services of a mutually advantageous kind. The School employs 22 professors and assistant professors and 48 other instructors and lecturers, many of whom are specialists of reputation. The School has a moderate number of scholarships and other pecuniary aids in its gift which are given only upon clear proof of merit. In addition to its regular instruction leading to the degree of M.D., the School offers graduate instruction of a grade heretofore usually sought for only in British or Continental schools. This instruction is wholly distinct from the undergraduate instruction in the School and is arranged in courses lasting about eight weeks each and designed to accommodate practitioners whose residence is necessarily brief. Certificates of attendance are issued to those who have taken these courses. The School offers summer instruction of a nature particularly suited for graduates whose opportunities for study have not been great, or who have had no chances to profit by hospital practice. The summer courses are clinical in character and are given in hospitals and dispensaries by the surgeons on duty in them, and in the School laboratories by the officers in charge. Details regarding any of the instruction offered by the School may be obtained from the Dean or the Secretary of the Medical School, Boylston Street, Boston.

## THE DENTAL SCHOOL.

Being closely connected with the Medical School and dependent upon hospital and infirmary work to be secured only in the midst of a large city, the Dental School is situated in Boston. It occupies the building on North Grove Street for many years used by the Medical School. To enter the School a candidate who has not passed an examination for admission to the College or the Scientific School of the University, or who has not already taken a degree in arts, letters, science, or medicine, must pass an examination in English, physics, and either Latin, French, German, algebra, or plane geometry. Admission to advanced standing is granted upon satisfactory grounds.

The course for the degree of the Doctor of Dental Medicine is a graded one, covering three continuous years. The first is identical with that in the Medical School. Instruction is given in anatomy, physiology, general chemistry, dental pathology, oral anatomy and physiology, neurology, dental chemistry, dental materia medica and therapeutics, surgery and surgical pathology, and operative and mechanical dentistry. Thirty persons take part in the instruction of the School, which is thorough and exhaustive. No one can secure the degree who has not studied medicine or dentistry three full years and passed the required examinations of the School. The Infirmary and laboratory practice afforded by the School is invaluable. The Infirmary remains open during the summer and one of the clinical instructors and a demonstrator are in attendance daily. Students have access to the Boston hospitals, and to the dissecting-rooms and museum of the Medical School.

The diploma of the School is accepted by the English Board of Registration under the Dental Act, so that graduates of the School who are not British subjects can practice dentistry in Great Britain without further examination. Board and lodging are obtainable in Boston at from five dollars a week upwards.

The School granted its first degree in 1869, and since that time has graduated over two hundred persons. Its graduates are practising in a majority of the northern and western States, in Canada, in most of the principal countries of Europe, in Australia, Japan, the West Indies, and South America.

## THE SCHOOL OF VETERINARY MEDICINE.

The School of Veterinary Medicine was founded in 1882. It has already rendered a service to the country in being among the first to introduce a graded course of study of the kind long in force in the best European schools. This change may be said to have put the modern science of veterinary medicine upon a secure foundation in America.

Entrance to its classes is guarded by admission examinations in English, arithmetic, and in either French, German, Latin, algebra, plane geometry, or zoölogy.

Its course extends over three years of about nine months each, and is in detail as follows:—

For the first year: Anatomy, physiology, general chemistry, and botany.

For the second year: Advanced anatomy, practical anatomy, medical chemistry, materia medica, therapeutics, pathological anatomy, surgical pathology, theory and practice of veterinary medicine, clinical medicine, and clinical surgery.

For the third year: Warrant and evidence, veterinary therapeutics, obstetrics, theory and practice of veterinary medicine, cattle practice, operative veterinary surgery, ophthalmology, parasites and parasitic diseases, clinical medicine, and clinical surgery.

The instructors in the School number 22 persons; and where the subjects are common to all branches of medicine, the instructors in them are drawn from among the members of the Medical Faculty of the University. The School has no scholarships. In order to be in the centre of a large and busy community, the School and its Hospital are situated in Boston, where, in buildings erected particularly for its uses, all purely veterinary instruction is given. The School building contains a lecture-room seating one hundred persons; a reading-room; a dissecting-room; and a museum. Adjoining is a Hospital building with accommodations for thirty-eight horses and a large number of dogs; this space is divided into three wards. The building includes also a large operating-room, a pharmacy, and a forge where horses are shod.

The department, although still comparatively small in numbers, is effectively constituted and offers opportunities for the study of both the theory and practice of veterinary medicine which, it is believed, are as yet unapproached in the United States. It has thus far graduated thirty-three Doctors of Veterinary Medicine, and it now has registered over thirty students.



## THE BUSSEY INSTITUTION.

The School of Agriculture and Horticulture is situated about five miles from the heart of the city on a farm of 200 acres in Jamaica Plain, a rural portion of the extended municipality of Boston. Instruction is given in agriculture, useful and ornamental gardening and stock-raising, and in Botany and Chemistry as applied to those arts. The students of the School include persons intending to become farmers, gardeners, florists, landscape gardeners, managers or stewards of large estates, stock raisers, overseers of farms, or owners of rural property.

The admission requirements are nominal as regards students who do not purpose to become candidates for a degree. If the degree of Bachelor of Science is desired, the candidate must have spent one year at the Lawrence Scientific School or give evidence of having taken its equivalent elsewhere. He must then study one year at the Bussey Institution and later pursue at least one year of advanced study there or in other departments of the University and pass examinations to determine the excellence of his work. Instruction is given by lectures and recitations, and by practical exercises in the laboratories, greenhouses, and fields; every student being taught to make experiments, study specimens, and observe for himself. The aim of the teacher is to give the student a just idea of the principles upon which the arts of agriculture and horticulture depend; to teach him how to make intelligent use of the scientific literature which relates to these arts; and to enable him to put a proper estimate upon those kinds of evidence which are obtained by experiments and by the observation of natural objects. The tuition-fee of \$150 is remitted in favor of students of limited means. Intelligent students in need of aid are permitted to work for their board and lodging. Those who pay the full fee may take courses in other departments of the University free of charge and enjoy the library and other privileges open to students in the Cambridge departments. The small number of students at this School assures to all the most careful personal attention.

The School building and grounds are situated upon high land commanding views of an attractive country. The groves and park-like plantations of the Arnold Arboretum adjoin and partly surround the land used by the School. Although so retired, the School is within easy reach of Boston with its libraries, museums, and galleries; and of Cambridge with its wealth of scientific apparatus.

## THE SUMMER SCHOOLS.

A week or more after Commencement and the departure of the great body of students, a number of short courses or schools are opened in the College buildings in Cambridge under the charge of instructors in the departments of Chemistry, Physics, Botany, Geology, Bodily Training, etc. These courses are largely attended by teachers in colleges and secondary schools; college students who are sufficiently in earnest in their studies to give half of their vacation to work, and other persons — women as well as men — who wish to avail themselves of the opportunity to use Harvard's wealth of apparatus in the weeks when it would otherwise be idle. The schools are gaining in numbers from year to year. The fees are small and the opportunities for individual progress under competent guidance are excellent. Detailed circulars about these schools are published early every spring and may be obtained from the Secretary. Each course lasts about six weeks, and occupies the whole time of its students during that period. The number of students in the summer schools of 1891 was 363.

During the summer of 1892 the following courses will be given : —

Chemistry, four courses, viz. : Fundamental principles of chemistry; qualitative analysis; quantitative analysis; organic chemistry.

Botany, two courses, viz. : Vegetable morphology and physiology and microscopical anatomy of phaenogams; cryptogamic botany.

Physics, two courses.

Geology, three courses.

Engineering, three courses, viz. : Topographical surveying; railway surveying; electrical engineering.

Physical Culture, two courses.

Physiology and Hygiene.

American History.

Socialism and Social Problems.

Trigonometry.

Horticulture.

English.

German, two courses.

French, two courses.

History and Art of Teaching.

Courses at the Medical School.

## THE ASTRONOMICAL OBSERVATORY.

The Observatory is situated upon a small hill about half a mile northwest of the principal University buildings. Its grounds embrace  $7\frac{1}{2}$  acres and contain nine buildings belonging to this department. The main building includes the residence of the Director, the library, various computing rooms, the 15-inch and 6-inch equatorials and 8-inch transit circle. One of the smaller buildings contains a photographic laboratory; the others contain apparatus, including photographic telescopes of the respective apertures 12, 11, and 8 inches, and a reflector 28 inches in aperture. Nearly all of these instruments are in constant use, two of the photographic telescopes being used throughout the whole of every clear night.

In addition to observations conducted in Cambridge, the Observatory has recently been maintaining a series of observations in Southern California and in Peru. Additional work in Peru is being carried on by a new expedition. The work undertaken in Peru is designed to complete investigations begun at Cambridge by extending them to the parts of the sky invisible at northern stations. It includes photometric measurements of the light of the stars, photographic charts of their places, and photographs of their spectra.

The reduction of the results of the observations in Cambridge, California, and Peru employs a force of about forty persons at the Cambridge buildings, and it is in computation and work upon photographic plates as well as in certain kinds of observing that approved students are sometimes employed under Professor Pickering's direction. Competent students needing pecuniary aid are given allowances varying from \$200 to \$500 a year for their services, but the work for which they are paid affords a low order of scientific training and leaves little time for other study.

The instruction in astronomy offered by the University is not given at the Observatory, but facilities are freely offered astronomers for making use of the Observatory library, buildings, grounds, and instruments so far as it can be done without interfering with regular work. Similar opportunities are sometimes offered to special students in astronomy, but the constant employment of the instruments greatly limits such use. Persons wishing to study astronomy in Cambridge, or to obtain employment at the Observatory in connection with their studies under the Faculty of Arts and Sciences, are advised to correspond with the Secretary several months before the opening of the academic year.

## THE UNIVERSITY LIBRARY.

The University Library contains about 400,000 bound volumes and over 300,000 unbound maps and pamphlets. It is the largest of the university libraries of the country. Its increase is rapid. In 1879 it gained 10,389 volumes; in 1885, 14,558; in 1888, 16,468. It is not all grouped in Gore Hall, its main building; volumes relating to professional work being placed in the Professional School buildings, while many in immediate demand in the classical department, the philosophical department, the historical department, and similar centres of activity are placed within easy reach of the class-rooms of those departments. The Library is conducted upon the most modern and approved methods, and its primary aim is to meet all immediate demands in the shortest possible time. It is catalogued by cards—first by authors, second by subjects. Delivery, considering the size of the collection and its steady and rapid growth, is singularly prompt. The possession of ample funds for the purchase of new books as fast as needed for effective instruction is one of the strongest features of the Library. Its total annual expenditures closely approach \$50,000. The efficiency of the Library management is shown by the number of those who use it and by the number of volumes lent. In 1888–89 over 80,000 volumes were lent to individuals. Of the Seniors in College in the same year, 97% used the Library as borrowers; of Juniors, 99%; and other classes to a less degree. Fifteen years ago only 57% of students in College used the Library as borrowers. The elective system deserves a part of the credit for this increased use of original authorities. The mere note-taking or text-book studying student is now the exception where he used to be the rule.

The following table shows the distribution of bound volumes in the several libraries:—

Gore Hall . . . . .	296,000
Laboratory, class-room, and office libraries . . . .	8,000
Lawrence Scientific School . . . . .	3,000
Divinity School . . . . .	24,000
Law School . . . . .	27,000
Medical School . . . . .	2,000
Bussey Institution . . . . .	3,000
Observatory . . . . .	7,000
Botanic Garden . . . . .	6,000
Museum of Comparative Zoölogy . . . . .	23,000
Peabody Museum . . . . .	1,000
	400,000

## THE LABORATORIES.

The principal laboratories in Cambridge are the Boylston Chemical Laboratory, built in 1857 and enlarged in 1870; the Jefferson Physical Laboratory, completed in 1884 at a cost of \$115,000; and the laboratories in the University Museum building, which include ample and separate accommodations for the departments of Zoölogy, Paleontology, Geology, Geography, Petrography, Mineralogy, and Botany. The portion of the Museum building occupied by the laboratories and lecture-rooms of these departments has a floor space of over an acre. The Peabody Museum contains a laboratory for anthropological and archaeological research. Boylston Hall now contains six large chemical laboratories and a number of private rooms for instructors. The largest working-room has places for 100 students. It is especially devoted to qualitative and descriptive work. That next in size has 64 places. In all 250 working tables are provided, of which one half are occupied by two students each, having separate lockers, and working at different hours. The new Boylston lecture-room has seats for 500 persons. The Jefferson Physical Laboratory is four stories high and 210 feet long. It has the most ample accommodations for both large and small classes, and for individual work, free from interruption. In the basement and first story stone tables resting upon separate columns of masonry furnish firm support for instruments in use. In the western end of the building a large rectangular tower stands on an independent foundation and has no contact with surrounding rooms. In it are conducted experiments requiring extraordinary stability or a great height—as for example, in Foucault's pendulum experiment. By a simple device nearly the entire length of the building may be used in experiments for testing the velocity of light. In the wing where magnetic experiments are tried there is no iron in the wood-work or masonry of the building. New apparatus is procured and the general running expenses of this Laboratory are in large part paid from a permanent income derived from invested funds.

The new laboratory of the department of Psychology occupies rooms in Dane Hall.

The laboratories of the Medical, Dental, and Veterinary Schools, and the School of Agriculture and Horticulture, are of a size equal to the needs of those departments. The year 1889-90 saw the completion, at a cost of \$35,000, of the Sears Laboratories for pathology and bacteriology. They form an important portion of the equipment of the Medical School.

## THE MUSEUMS.

The magnitude of the museums of the University is illustrated by the fact that the University Museum alone contains four acres of floor space. It includes the Museum of Comparative Zoölogy, Natural History Laboratories of Zoölogy, Paleontology, Geology, and Geography, and the Museums of Mineralogy and Botany. The portion of the building devoted to Comparative Zoölogy and the laboratories named cost \$450,000. The section occupied by the Botanical Museum cost \$75,000 and that occupied by the Mineralogical Museum \$50,000.

The original scheme for this Museum was proposed by Professor Louis Agassiz in 1859. Its realization is in great part the work of his son Alexander Agassiz, the present Curator of the Museum.

In an adjoining building, having a floor area of 29,828 square feet (not including basement and attic), are the Peabody Museum of American Archaeology and Ethnology and the Semitic Museum. The latter will in time be removed to other quarters. The Fine Arts collections are in part in the rooms of the department of Fine Arts in Sever Hall and in part in the Museum of Fine Arts, Copley Sq., Boston. The collection of coins and medals belonging to the University is kept in Gore Hall. The Anatomical Museum is placed in the Medical School building on Boylston St., Boston. The Museum of the Dental School is in the School building on North Grove St., and that of the School of Veterinary Medicine is in the Veterinary Hospital building on Village St., Boston. The Arboretum Museum is to be placed in the new Hunnewell building. The actual cost of the collections in the Museum of Comparative Zoölogy has been over \$350,000. The collections are in part open to the public. The first of the exhibition-rooms open to the public is the Synoptic Room, in which the entire animal kingdom is summarized in a compact collection of distinctive types. Beyond this are the systematic collections of Mammals, Birds, Reptiles, Fishes, Mollusks, Crustacea and Insects, Radiates, Sponges, and Protozoa. Finally, there are the rooms devoted to faunal areas, including those of North and South America, Europe, the Indo-Asiatic, the African, the Australian, and the Atlantic. The larger parts of the collection are not open to the public, but are in constant use by officers or competent students of the University engaged in research.

The collections in the Botanical Museum are not fully arranged and are open to the public only in part. When completed, the collections will be found to be economic in theory, containing, for example,

woods, fruits, fibres, etc., as well as a unique and beautiful series of glass models of flowers.

The Mineralogical Collections are in part open to the public. The public portions — about one half in amount — are large enough fully to illustrate the extent, beauty, and variety of the mineral kingdom. Some portions are systematic in arrangement; others are grouped to illustrate striking characteristics of minerals — lustre, for example. The collection of meteorites is one of the finest in existence. The portion of the collections not open to the public consist of systematic series grouped for specific and comparative study, and duplicates and class-room material continually being used and replaced. The value of this collection is great. The meteorites alone represent \$30,000; the whole collection, from \$100,000 to \$150,000.

The Peabody Museum is open to the public. It contains large archaeological and ethnological collections obtained by systematic and thorough explorations of burial-places, caves, shell-heaps, village-sites, mounds, and ruins in many parts of North, Central, and South America, as well as by extensive examinations of gravel beds, peat bogs, and river and other deposits of various geological ages. By the arrangement in the Museum of these special collections in their geographical sequence, each tells its own story in all its details.

For a comparative study of the archaeology and ethnology of other parts of the world two rooms are devoted to collections arranged ethnographically. There is also a large anthropological collection, including over two thousand human crania and many more or less complete skeletons.

The Semitic Museum, founded by Mr. Jacob H. Schiff in 1889, occupies temporary quarters in the new part of the Peabody Museum. Its aim is to furnish materials for illustration of the Semitic instruction given in the University and for original investigation, and also to show to the general public the place which belongs to the Semites in the history of culture. The collection embraces casts of many of the most interesting Semitic monuments in the British Museum, the Louvre, and the Berlin Museum. Among these are Assyrian bas-reliefs from Nineveh and Kalah; Babylonian statues from Tello; and Phœnician, Hebrew, Moabite, Arabic, Punic, Hittite, and Persian monuments, bas-reliefs, and inscriptions. It contains also manuscripts, Arabic, Hebrew, and Syriac, and a large number of photographs illustrating ancient and modern Semitic life, art, and scenery. There are many original clay tablets from Babylon, some of which are of great interest, and also Semitic coins and other objects illustrating the life of the people. It is intended to make the collection as complete as possible in material from Palestine illustrating Hebrew history. The Museum will be opened in April, 1891.

## BOTANIC GARDEN, HERBARIA, AND ARBORETUM.

The Botanic Garden and greenhouses occupy about seven acres of land opposite the Observatory grounds. About 6000 species of flowering plants are grown for educational purposes, supplying students of Botany who are members of the University with abundant material for determination or investigation. The Botanical library of 9000 volumes and pamphlets and the University Herbarium are contained in one of the buildings belonging to the Garden. The Herbarium contains several hundred thousand specimens which are open, under the direction of the Curator, to qualified and properly registered students. The accessions to the Herbarium in 1889-90 illustrate the direction and the rapidity of its growth. They included 850 specimens from Northern Mexico, embracing many new and little-known species; 575 from Canada; 600 from Porto Rico; 670 from Bolivia; 700 through the Director of the Kew Gardens, mainly from China, Tasmania, and Brazil; 126 from Arabia Felix; 300 from South Africa; 240 from Australia; the entire Thomas P. James collection of mosses, and a large part of the George Thurber collections.

The Herbarium of Cryptogamic Botany is placed in the University Museum in connection with the Botanical Museum. It contains several hundred thousand specimens, including the Tuckerman collection of lichens, having about 75,000 specimens; the Curtis collection of fungi, about equal in magnitude; and the Farlow collection of algae, lichens, and fungi. Competent students who are not members of the University may obtain permission to use the Herbarium under proper supervision.

The Arnold Arboretum occupies a portion of the Bussey Farm, 160 acres in extent, in that part of Boston known as West Roxbury. It was founded for the purpose of scientific research and experiment in Arboriculture, Forestry, and Dendrology, and as an out-door museum of trees and shrubs suited to the climate of Massachusetts. Open air instruction in arboriculture is given to classes during a part of the year. The living collections are supplemented by others in the Herbarium and Museum which are soon to be placed in the large building to be erected on the grounds as the gift of Mr. H. Hollis Hunnewell. Any one properly qualified to pursue the study of practical arboriculture or forestry may be admitted to the Arboretum as a student. Details are obtainable from the Director, Professor Charles S. Sargent, Brookline, Mass.



## THE RELIGIOUS EXERCISES OF THE UNIVERSITY.

Harvard University is in the broadest possible sense unsectarian. Its officers, graduates, and students include persons of every shade of belief. All its religious exercises are voluntary. Compulsory attendance at morning prayers was abolished in 1886, and the effect of the change has been good. The regular services are held on Sunday evenings, every week-day morning in term-time between the breakfast hour and the beginning of lectures, and on Thursday afternoons during the winter. These services are conducted by the Plummer Professor of Christian Morals, assisted from time to time by five Preachers to the University who are appointed annually by the Governing Boards. These preachers have included Rt. Rev. Phillips Brooks, D.D., Rev. Edward Everett Hale, D.D., Rev. Lyman Abbott, D.D., and other clergymen of conspicuous ability. Every day during term-time the Preacher to the University conducting services for the time being receives, at stated hours, members of the University who desire advice or aid. The many hours occupied by these interviews are counted by both parties to them as productive of great and lasting good. A portion of the time the Sunday evening services are conducted by invited clergymen from various parts of the country, who are chosen on account of their recognized leadership in their localities and denominations. Among those holding these services during the past few years have been the Rev. Dr. McCosh of Princeton, N. J., Rev. Dr. W. R. Huntington of New York, Rev. Dr. Munger of New Haven, Rt. Rev. H. C. Potter of New York, Rev. Dr. Fisher of New Haven, Rev. President Hyde of Brunswick, Rev. Dr. McVickar of Philadelphia, Rev. Professor Tucker of Andover, Rt. Rev. T. U. Dudley of Kentucky, Rev. President Andrews of Providence, Professor Henry Drummond of Glasgow, and Mr. Moody the evangelist.

The Preachers to the University publish a brief pamphlet describing the religious work of the year which may be obtained on application. It bears witness to the fact that religious life in the University is healthy and active.

In the Harvard Divinity School weekly debates and conferences are held on Wednesday afternoons, and preaching services on Friday evenings.

During the last academic year a series of Tuesday evening College Conferences on the literary, ethical, and religious aspects of the Bible were held. Among the subjects chosen were the fol-

lowing: "The Literary Aspect of the English Bible," Professor Kittredge; "The Bible and the Sacred Books of the East," Professor Everett; "The Bible in its relation to Modern Problems," Rev. Lyman Abbott; "The Development of the Hebrew Religion," Professor Toy.

Among the subjects of the Conferences in 1888 and 1889 were the following: "College Responsibility," Rev. Phillips Brooks, D.D.; "College Public Opinion," President Eliot; "The Recovery of Religious Enthusiasm," Rev. Professor Tucker of Andover; "The Belief in Immortality," Rev. Professor Everett; "Public Life," Hon. Theo. Roosevelt of New York; "Problems of Charity in a Large City," A. T. White, Esq., of Brooklyn, N. Y.; and a series of addresses on "The Choice of a Profession" by eminent members of the various learned professions.

The religious societies of the University are the Harvard Y.M.C.A. (formerly known as the Society of Christian Brethren), the St. Paul's Society, the Oxford Club, and the Harvard Religious Union. They have numerous members. Many members of the University engage actively in charity work in Boston and Cambridge, fields in which ample opportunity is offered for effort of this kind.

There are in Cambridge or its immediate vicinity theological seminaries of at least five of the leading evangelical denominations.

In addition to the opportunities for voluntary worship in the University Chapel, seats are provided for students, at the expense of the College, in many churches of different denominations situated near the College buildings.

The following extract from a magazine article published recently by a young man who came to Harvard from another college, illustrates student opinion of the moral condition of the University: "It is only the outgrowth of tendencies planted in the school and the home. If boys come from sensible homes and schools to Harvard, they will find it a place unexcelled in developing influences and opportunities. In every case the choice of what the man will be must rest with the man himself."

## THE LECTURE-ROOMS AND THEIR USES.

All the Professional Schools of the University have separate buildings devoted exclusively to their own uses, and their buildings have ample lecture-room accommodations. The Lawrence Scientific School has a building of its own containing 19 lecture-rooms and work shops. Its students also work much of their time in the laboratories and museums. The College and Graduate School together occupy lecture-rooms in nine buildings, 80 rooms in all being in constant use. A few of these rooms seat between four and six hundred students at once, but most of them are adapted to classes of 20, 40, 70, or 125 each. Small classes are one feature of the elective system. The largest of the lecture-halls of the University is Sanders Theatre, which seats 1400 persons. The Commencement-Day exercises are held in it, as well as many evening concerts, lectures, and readings.

The number of evening lectures, seminary meetings, conferences, concerts, and readings is large, students often having their choice, in a single evening, of four or five such auxiliaries to regular work. The lecturers, while often members of one of the University Faculties, are quite as likely to be distinguished visitors from abroad or from some other centre of American culture. Most of the speakers come as the guests of student societies like the Classical Club, the Reform Club, the Deutscher Verein, or the Total Abstinence League; but the University often invites eminent scholars to deliver courses of public lectures, as for example, Professor Lanciani in 1886 and Hon. David A. Wells in 1889. A series of eight instrumental concerts is given each winter, in Sanders Theatre, by the Boston Symphony Orchestra. The best music is performed at these concerts. During the winter of 1890-91 the number of public evening lectures and similar appointments in the University lecture-rooms was over a hundred, the audiences in some instances exceeding a thousand.

Societies like the Harvard Union, the Republican Club, the Pierian Sodality and Glee Club, the Harvard Y. M. C. A. and others which are representative of student activity in economic, literary, musical or religious ways make frequent evening use of the lecture-rooms at the times of their stated meetings. It is the policy of the University to allow the free use of its rooms by student societies which are not simply social in their character, or unrepresentative in their membership.

## THE ATHLETIC BUILDINGS AND FIELDS.

The University has four buildings devoted wholly to athletic purposes — the Hemenway Gymnasium, the Carey Athletic Building, the University Boat House, and the Weld Boat House. The Hemenway Gymnasium, built in 1879, has — allowing for the reasonable coming and going of individuals — accommodations for between 2000 and 3000 students. As regards size, strength, and variety of its apparatus and completeness of its appointments, the Gymnasium supplies every desire of the indoor athlete. For members of the University and class crews, nines and elevens, the Carey Athletic Building, having a floor area of 7848 square feet, gives peculiar accommodations. For the crews there is a tank containing a fixed boat, around which passes a current of water. For the nines there are rooms in which indoor practice in pitching and batting is made easy. Early in the autumn the elevens use a room with an earth floor, which gives opportunities for drill in dodging, tackling, and passing the ball. The same room is available for practice in jumping, vaulting, and similar exercises. Of the two boat-houses, the University is for the regular crews, and is arranged to hold their long shells used in races. Its floor space is 6893 square feet. The Weld Boat House is for the use of any students who enjoy rowing. It contains boats of various kinds sufficient for 300 persons. All students using the athletic buildings are closely supervised and allowed to take only proper kinds and amounts of exercise. The Director of the Gymnasium is a physician and an expert in physical development. The outdoor sports of the students requiring fields for play are accommodated on Jarvis Field (five acres), Holmes Field (five acres), Norton Field (seven acres), and the Soldier's Field (twenty-seven acres). The latter is not yet in use, but has sufficient area to meet the demands of a very large number of students. The athletic fields now in use have stands and benches erected around them sufficient to seat about 6000 persons.

The Soldier's Field was given to the University in 1890 by Major Henry L. Higginson of Boston in memory of friends who served in the Civil War. In time it will become the principal athletic field of the students. It is situated on the south side of the Charles River, opposite Old Cambridge, and adjoins the extensive marshes once owned by Mr. Longfellow and given by him to the University.

## PRIZES.

The money prizes offered annually in the various departments of the University amount to \$2755. They are as follows :—

Nine Bowdoin prizes, varying from \$50 to \$100 each, for dissertations upon announced economic, classical, or scientific subjects, or for translations of set passages of English into Latin or Greek prose. These are open wholly or in part to students in the Graduate School, the College, the Scientific School, and other parts of the University.

Five Boylston prizes, three of \$45 each and two of \$60 each, for excellence in elocution, open to Seniors and Juniors in the College.

The Sargent prize of \$100, for the best metrical translation of an ode of Horace, open to students in the undergraduate department.

The Sumner prize of \$100, for the best dissertation on a subject connected with the topic of Universal Peace, open to all departments.

The Toppan prize of \$150, for the best essay on a selected subject in Political Science, open to graduates of three years' standing and to students in the Graduate and Professional Schools.

The Chauncey Wright prize of \$25, for the best mathematical thesis on an announced subject, open to Juniors, Seniors, and graduates.

The Dante prize of \$100, for the best essay on a subject drawn from the life or works of Dante, open to students in any department and to graduates of not more than three years' standing.

The George B. Sohier prize of \$250, for the best thesis presented by an approved candidate for Honors in English or modern literature.

The Paine prizes, two of \$100 each, for the best essays by any students of the University on the ethical aspect of social questions; for example, labor problems, productive coöperation, etc.

The Semitic prizes, two of \$100 each, open to students in the Semitic Languages.

The Harvard Law School Association prize of \$100, for the best essay upon a selected subject in law, open to third-year students in the Law School.

The Boylston Medical prizes, two prizes of one or two hundred dollars each, upon announced subjects in medical science, open to public competition.

The Porter prize of \$50, for the best dissection deserving the award illustrative of surgical anatomy, open to members of the Medical School and graduates of not more than five years' standing.

The Otology prize of \$25, for the best preparation illustrating the osseous anatomy of the ear, or for the best thesis showing original work on an otological subject, open to third-year students in the Medical School.

## CONCLUSION.

This brief survey has shown that Harvard University with its large corps of instructors; its collections of books, apparatus, and scientific material; its activity in the general advancement and diffusion of knowledge; its ability and readiness to aid the poor but promising student; its hospitality towards all scholars, no matter what their race or creed, is in fact a true University.

Although age is too apt to breed unwise conservatism, this University is more frequently assailed for its spirit of progress, and its willingness to break with precedent for the sake of truth, than it is for its attachment to venerable tradition. It has done its part in making the degree of Bachelor of Arts a broader and a higher title. It has increased the significance of the degrees of Master of Arts and Doctor of Philosophy, and it has been prudent in its bestowal of honorary degrees. Having for twenty years steadily increased the severity of its requirements for admission and for graduation, it is not unwilling to permit capable students to compress somewhat the term of residence ordinarily required for the degree of Bachelor of Arts, in order that more young Americans may seek the degree of Bachelor of Arts, and that the professional degrees and the degrees of Master of Arts, Doctor of Philosophy, and Doctor of Science may be taken less late in life by college graduates. Not a few who are able to meet in full the requirements for the first degree in three years or three years and a half are allowed to do so. All who aim to become teachers are encouraged to secure either the Master's degree or the degree of Doctor of Philosophy.

In 1871 Harvard University included 1149 students and 116 teachers. In 1892 it includes 2658 students and 253 teachers. There is reason to suppose that this rate of increase may be maintained. The authorities of the University desire it; the alumni are believed to be ready to provide such additional endowments as may be needed, and the public is alive to the fact that more is to be gained by expanding an existing institution of merit than by multiplying poorly equipped schools. Harvard's equipment is capable of serving many more advanced students than now use it. Such students, if qualified for advanced work, are welcome not only in the departments of Philology, Literature, Political Science, Mathematics, and Philosophy, but also in the scientific work-shops of the University — the Observatory, the Museums, the Herbaria, and the experimental rooms of the laboratories.

Table of Schools and Colleges from which young men actually entered Harvard College from 1881 to 1890 inclusive, with the number that entered from each institution in each year. Special students are not included. An asterisk (\*) indicates a public school, a dagger (†) an endowed school.

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Acadia College, Wolfville, Nova Scotia . . . . .	2	1	.	.	1	.	.	1	1	1
†Adams Academy, Quincy . . . . .	12	13	19	11	1	2	10	2	9	2
Adelbert College of W. R. Univ., Cleveland, O. . . . .	.	1	.	.	.	.	.	.	.	1
†Adelphi Academy, Brooklyn, N. Y. . . . .	.	.	.	.	1	1	1	.	.	.
†Albany, N. Y., Academy . . . . .	.	.	.	1	.	.	.	2	2	.
*Albany, N. Y., High School . . . . .	.	1	1	.	.	.	.	.	.	.
Albion College, Mich. . . . .	.	.	.	.	.	.	.	.	1	.
Alfred, N. Y., University . . . . .	.	.	1	.	.	.	.	.	.	.
Amherst College . . . . .	1	.	.	.	1	2	1	.	1	3
Andover Theological Seminary . . . . .	.	.	.	.	.	1	.	.	1	1
*Arlington, Cotting High School . . . . .	1	1	1	2	2	.	.	2	.	3
Atlanta University, Georgia . . . . .	.	.	.	.	.	.	.	.	.	1
*Auburn, Me., Edward Little High School . . . . .	.	.	.	.	.	.	.	1	.	.
*Auburn, N. Y., High School . . . . .	.	.	.	.	.	.	.	.	1	.
*Augusta, Me., Cony High School . . . . .	.	.	.	.	.	.	1	.	.	.
Augustana College, Rock Island, Ill. . . . .	.	.	.	.	.	1	.	.	.	1
†Barre Academy . . . . .	1	.	.	.	.	.	.	.	.	.
Baughers Academy, Hanover, Pa. . . . .	.	.	1	.	.	.	.	.	.	.
Belmont School, Belmont, Cal. . . . .	.	.	.	.	.	4	2	.	1	.
Belmont School, Belmont, Mass. . . . .	.	.	.	.	.	.	.	.	.	2
Berkeley Gymnasium, San Francisco, Cal. . . . .	.	.	1	.	.	.	.	.	.	.
Berkeley School, Boston . . . . .	.	.	.	.	1	.	1	1	5	3
Berkeley School, New York . . . . .	1	1	1	6	2	6	4	4	1	1
Berkeley School, Providence, R. I. . . . .	.	.	.	.	.	.	.	.	1	.
†Berwick Academy, South Berwick, Me. . . . .	.	.	.	.	.	.	.	.	.	1
Bethany College, W. Va. . . . .	.	.	.	.	1	.	.	.	.	.
Boston College . . . . .	.	.	.	.	.	.	.	.	1	.
*Boston English High School . . . . .	.	.	.	.	.	.	4	5	4	7
*Boston Latin School . . . . .	17	17	20	21	17	25	31	25	28	25
Boston University . . . . .	.	.	.	1	.	2	1	.	4	.
Bowdoin College, Brunswick, Me. . . . .	.	.	.	.	.	.	.	.	.	1
†Brackett Academy, Greenland, N. H. . . . .	.	1	.	.	.	.	.	.	.	.
*Bridgewater High School . . . . .	2	.	.	.	.	.	.	.	.	.
†Bristol Academy, Taunton . . . . .	1	1	3	.	3	.	.	1	.	.
†Bromfield School, Harvard . . . . .	.	.	1	.	.	.	.	.	.	.
*Brookfield High School . . . . .	.	.	1	.	.	.	.	.	.	.
*Brookline High School . . . . .	2	2	.	.	.	2	.	.	4	.
Brooklyn, N. Y., Latin School . . . . .	.	.	.	.	.	.	.	.	.	2
Brown, H. H., Private School, Philadelphia, Pa. . . . .	.	.	1	.	.	.	.	.	1	.
Brown University, Providence, R. I. . . . .	.	1	.	.	1	.	.	.	1	1
Browne & Nichols, Private School, Cambridge . . . . .	.	.	.	.	1	3	3	6	11	6
Bucknell University, Lewisburg, Pa. . . . .	.	.	.	.	.	.	.	1	.	.
*Buffalo, N. Y., High School . . . . .	.	1	.	1	.	.	.	.	2	.
Buffalo, N. Y., Latin School . . . . .	.	.	.	2	1	.	.	1	1	.
*Buffalo, N. Y., State Normal School . . . . .	.	.	.	.	.	.	.	1	.	.
†Burr & Burton Seminary, Manchester, Vt. . . . .	.	.	.	.	.	.	.	.	1	.
*Cambridge Latin School . . . . .	11	8	8	5	11	14	4	14	14	13

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Carleton College, Northfield, Minn. . . . .	.	.	.	.	.	.	.	.	1	2
*Castine, Me., High School . . . . .	.	1	.	.	.	.	.	.	.	.
Centre College, Danville, Ky. . . . .	.	.	.	.	.	1	.	.	.	.
Chadwick & Pye, Boys' Prep. Sch., Brooklyn, N. Y. . . . .	1	.	.	.	.	.	.	.	.	.
Charleston, S. C., College of . . . . .	.	.	.	.	.	.	.	1	.	.
Charlier Institute, New York . . . . .	1	.	.	.	.	.	.	.	.	.
Chase, R. H., Private School, Philadelphia, Pa. . . . .	3	2	1	.	.	.	.	.	.	.
Chauncy Hall School, Boston . . . . .	2	3	2	1	2	2	1	1	.	4
*Chelsea High School . . . . .	2	2	.	2	.	2	2	2	4	1
*Chicago, Ill., High School . . . . .	.	.	.	.	.	1	.	.	.	.
Christian College, Monmouth, Ore. . . . .	1	.	.	.	.	.	.	.	.	.
*Cincinnati, O., Hughes High School . . . . .	.	.	.	.	1	.	.	.	.	2
*Cincinnati, O., Woodward High School . . . . .	1	1	.	3	1	.	1	1	.	.
Cleveland, O., Academy . . . . .	.	.	2	.	.	.	.	.	.	.
*Cleveland, O., Central High School . . . . .	1	2	1	.	3	.	.	.	1	.
*Cleveland, O., West High School . . . . .	1	.	1	1	.	1	1	.	.	.
†Colby Academy, New London, N. H. . . . .	1	.	.	.	.	.	.	.	.	.
Colby University, Waterville, Me. . . . .	1	.	.	.	.	.	.	.	1	.
College of the City of New York . . . . .	.	.	.	3	.	.	2	1	1	.
College of Emporia, Kan. . . . .	.	.	.	.	.	.	.	.	1	.
College of New Jersey, Princeton, N. J. . . . .	.	.	2	.	.	.	1	.	.	.
†Collegiate and Polytech. Institute, Brooklyn, N. Y. . . . .	2	1	1	1	1	2	.	.	3	.
Colorado College, Colorado Springs, Colo. . . . .	.	.	.	.	.	1	.	.	.	.
Columbia College, New York . . . . .	.	.	1	1	.	.	1	1	.	.
Columbia College School of Mines, New York . . . . .	.	.	.	.	.	1	.	.	.	.
Columbian University, Washington, D. C. . . . .	1	.	.	.	.	1	1	.	.	.
*Concord High School . . . . .	3	2	.	.	.	.	2	.	1	.
Cornell College, Mt. Vernon, Iowa . . . . .	.	.	.	.	.	.	.	.	1	.
Cornell University, Ithaca, N. Y. . . . .	.	.	.	.	1	.	.	.	1	.
†Corning, N. Y., Free Academy . . . . .	1	.	.	.	.	.	.	.	.	.
†Cushing Academy, Ashburnham . . . . .	.	.	.	.	1	.	.	.	.	.
Cutler, A. H., Private School, New York . . . . .	2	1	4	1	2	2	1	4	3	.
Cutler, Edward H., Private School, Newton . . . . .	.	.	.	.	.	.	2	5	7	.
Dalhousie College, Halifax, N. S. . . . .	.	.	.	.	.	.	.	1	3	.
Dartmouth College, Hanover, N. H. . . . .	.	.	.	.	.	.	.	1	1	.
Dearborn Morgan School, Orange, N. J. . . . .	.	.	2	.	1	.	.	3	.	.
*Decatur, Ill., High School . . . . .	.	.	.	.	2	.	.	.	.	.
Delaware College, Newark, Del. . . . .	.	.	1	.	.	.	.	.	.	.
Denison University, Granville, O. . . . .	.	.	.	.	.	.	.	.	1	.
*Denver, Colo., High School . . . . .	.	.	1	.	.	2	1	.	.	.
†Derby Academy, Hingham . . . . .	1	.	.	.	.	.	.	.	.	.
Dickinson College, Carlisle, Pa. . . . .	1	.	.	.	.	.	.	.	1	.
†Dickinson High Sch. & Deerfield Acad., Deerfield . . . . .	.	.	.	.	1	.	.	.	.	.
*Dorchester High School . . . . .	1	.	.	.	.	.	.	.	1	.
Drury College, Springfield, Mo. . . . .	.	.	.	.	.	.	1	.	.	.
†Dummer Academy, South Byfield . . . . .	.	1	.	3	.	.	.	.	.	.
Dwight School, New York . . . . .	.	.	.	.	.	.	.	.	1	.
†East Maine Conference Seminary, Bucksport, Me. . . . .	.	.	.	1	.	.	.	.	.	.
Eays, Wm. N., Private School, Boston . . . . .	.	.	.	.	.	.	.	2	.	.
*Elkhart, Ind., High School . . . . .	.	.	.	.	.	1	.	.	.	.
*Ellsworth, Me., High School . . . . .	.	.	.	.	1	.	.	.	.	.
Emerson Institute, Washington, D. C. . . . .	1	1	4	2	.	1	.	.	.	.
Eminence College, Ky. . . . .	.	.	.	.	.	.	.	1	.	.
Episcopal Theological School at Cambridge . . . . .	.	.	.	.	.	1	.	.	1	.
†Eton College, England . . . . .	1	.	1	.	.	.	.	.	.	.
Eureka College, Eureka, Ill. . . . .	.	.	.	.	.	.	1	.	1	.
*Everett High School . . . . .	.	.	.	.	.	.	.	.	1	.
Everson, D. S., Collegiate School, New York . . . . .	1	.	.	1	.	1	.	.	.	.



	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
*Fall River, B. M. C. Durfee High School . . . . .	2						1	1	1	
Fish, C. E., Private School, Worcester . . . . .								1	5	
Fisk University, Nashville, Tenn. . . . .							1			
*Fitchburg High School . . . . .					1	1	1			
Fort Hill School, Rochester, N. Y. . . . .						1			1	
*Fort Wayne, Ind., Central Grammar School . . . . .	1									
*Framingham High School . . . . .		1			1				1	
Frankfurt Gymnasium, Germany . . . . .							1			
Franklin and Marshall College, Lancaster, Pa. . . . .	1									
†Friends' Academy, New Bedford . . . . .	1		2	2	1	1	2		1	
*Gardner High School . . . . .		1					1			
Georgetown College, D. C. . . . .					2		1			
Gibbens and Beach, Private School, New York . . . . .	1	2	1							
*Gloucester High School . . . . .		2	1	2	2	1	1	1		3
Goff, C. B., Engl. & Class. Sch., Providence, R. I. . . . .							1			
Griswold College, Davenport, Iowa . . . . .	1									
Groton School, Groton . . . . .					1	3		11	1	
Grove City College, Pa. . . . .								1		
Gunnery School, Washington, Conn. . . . .		1		3				1		
Hale, Albert, Private School, Boston . . . . .								3	5	
Hamilton College, Clinton, N. Y. . . . .				1		1	1			
Hamline University, St. Paul, Minn. . . . .								1	1	
Hanover College, Ind. . . . .			1							
†Harrow, England . . . . .					1					
†Harry Hillman Academy, Wilkes-Barre, Pa. . . . .		1	2		1					
*Hartford, Conn., High School . . . . .		1	1				1			
Harvard Graduate Student . . . . .			1				1			
Harvard College Special Student . . . . .	1	5	8	9	6	14	17	25	15	17
Harvard Divinity School . . . . .			1				1	1	2	
Harvard Medical School, Boston . . . . .				1				1		
Harvard School, Chicago, Ill. . . . .		1		1	3	4	4	3	1	
Harvard Veterinary School, Boston . . . . .								1		
Haverford College, Pa. . . . .	2	1	1	2	1	1	1	2	1	1
*Haverhill High School . . . . .	2	2		1	4		1	1	2	
Hill School, Pottstown, Pa. . . . .								1		
*Hingham High School . . . . .				1	2					
Hobart College, Geneva, N. Y. . . . .				2		1	2			
Holbrook's Military School, Sing Sing, N. Y. . . . .							1			
Hopkinson, John P., Private School, Boston . . . . .	4	14	14	18	10	19	23	19	9	15
Howard College, Marion, Ala. . . . .								2		
Howard University, Washington, D. C. . . . .							1			
*Hyde Park High School . . . . .		1	1			2				
*Hyde Park, Ill., High School . . . . .	1			1						
Illinois State Normal University, Normal, Ill. . . . .		1	1	2				1		
Indianapolis, Ind., Classical School . . . . .	1	1	1		1	1				
*Indianapolis, Ind., High School . . . . .				1	1					
*Indiana State Normal School, Indiana, Pa. . . . .									1	
Indiana University, Bloomington, Ind. . . . .		2								
Iowa College, Grinnell, Iowa . . . . .									2	
†Ives Seminary, Antwerp, N. Y. . . . .						1				
Jarvis Hall, Denver, Colo. . . . .				1						
Johns Hopkins University, Baltimore, Md. . . . .		1		1				1		
*Kansas City, Mo., High School . . . . .									1	
Kendall, Joshua, Private School, Cambridge . . . . .	2	1	2	2	2	1	1		2	
Kentucky Wesleyan College, Millersburg, Ky. . . . .		1								
Kenyon College, Gambier, O. . . . .						1			1	
Keystone Academy, Factoryville, Pa. . . . .				1						
King's School, Stamford, Conn. . . . .						1	1			

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Knox College, Galesburg, Ill. . . . .			1							1
Lafayette College, Easton, Pa. . . . .					1					
*Lancaster High School . . . . .								1		
†Lawrence Academy, Groton . . . . .	1									
*Lawrence High School . . . . .		1			1	1	1			
Lawrence Scientific School, Cambridge		1					1	2	4	3
Lawrence University, Appleton, Wis. . . . .		1				1				
†Lawrenceville School, N. J. . . . .							3	1		
*Leominster, Field High School . . . . .		1						2		
LeRoy, N. Y., Academy . . . . .		1								
*Lexington High School . . . . .							1			
*Louisville, Ky., Male High School . . . . .							1			
*Lowell High School . . . . .	3	1	2	1	2	5	1	4	2	1
*Lynn High School . . . . .	1	1	2	3	2	3	2	1	3	1
†McCormick Institute, Mt. Vernon, N. H. . . . .								1		2
Madison University, Hamilton, N. Y. . . . .								1		2
*Malden High School . . . . .	1	3							1	
Marietta College, Ohio . . . . .	1									2
Mass. Institute of Technology, Boston . . . . .									1	1
Milwaukee, Wis., Academy . . . . .				1		1	1		1	
*Marlboro' High School . . . . .				2	1	1			1	
Marlborough St. School, Boston . . . . .							1			
Marston's University School, Baltimore, Md. . . . .							1			1
Maupin's University School, Ellicott City, Md. . . . .			1							
*Medford High School . . . . .				1		1			2	1
*Melrose High School . . . . .	1	1						2	1	
*Merrimac High School . . . . .							1			
*Methuen High School . . . . .										1
*Michigan State Normal School, Ypsilanti . . . . .							1			
Middlebury College, Vt. . . . .									1	
*Milford High School . . . . .		1	2		2	2				
*Milwaukee, Wis., High School . . . . .	1				2		1		2	
Monmouth College, Ill. . . . .										1
*Montclair, N. J., High School . . . . .				1						1
*Montpelier, Vt., High School . . . . .	1									
Morse, J. H., Private School, New York . . . . .			2			2	1	2	1	
Mt. Allison College, Sackville, N. B. . . . .					1	1				1
Mt. Pleasant Military Academy, Sing Sing, N. Y. . . . .			1							
Nashville, Tenn., State Normal College . . . . .							1			
*Natick High School . . . . .	1					2				
*Needham High School . . . . .	1					1				
*Newark, N. J., High School . . . . .									1	
*Newburyport, Brown High and Putnam Schools . . . . .						1		1	1	
†New Church School, Waltham . . . . .				1						1
*Newport, R. I., Rogers High School . . . . .	2	2	1	2	6	1	3	1		
*Newton High School . . . . .	5	4	5	4	2	5	2	4	4	5
Newton, N. J., Collegiate Institute . . . . .				1						
New York School of Languages . . . . .		1			3					
†Nichols Academy, Dudley . . . . .			1							
Nichols, Wm., Private School, Boston . . . . .		1	4	2	10	1	5		2	5
Noble, G. W. C., Private School, Boston . . . . .	6	10	9	13	10	12	8	12	9	8
*Northampton High School . . . . .	1	1								
*North Attleboro' High School . . . . .							1			
Northwestern University, Evanston, Ill. . . . .								1		3
Oberlin College, Ohio . . . . .				1		2	1	1		1
Ohio Wesleyan University, Delaware, O. . . . .					1	1	6			1
*Omaha, Neb., High School . . . . .			1							1
Park Institute, Rye, N. Y. . . . .						1				

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
*Pawtucket, R. I., High School . . . . .	.	.	.	.	.	.	.	1		
Peekskill, N. Y., Military Academy . . . . .	.	2	.	.	.	.	.			
Pennsylvania College, Gettysburg, Pa. . . . .	.	1	.	1	.	.	.			
*Philadelphia, Penn., High School . . . . .	.	.	.	.	.	1	.			
†Phillips Academy, Andover . . . . .	3	5	11	8	8	10	6	14	12	12
†Phillips Academy, Exeter, N. H. . . . .	19	23	25	25	29	16	19	22	20	28
Pierce Christian College, College City, Cal. . . . .	.	.	1	.	.	.	.	.	.	
Pine Hill Theological College, Halifax, N. S. . . . .	.	.	.	.	.	.	.	.	1	
†Pinkerton Academy, Derry, N. H. . . . .	.	.	.	.	.	.	1	1		
*Pittsburg, Pa., Central High School . . . . .	.	.	.	.	1	.	.	1	1	
*Portland, Me., High School . . . . .	5	.	2	1	3	2	.	1	2	
*Portsmouth, N. H., High School . . . . .	.	.	.	.	.	.	.	.	1	
Proctor Academy, Andover, N. H. . . . .	.	.	1	.	.	.	.	.	.	
Pro-Gymnasium, Germany . . . . .	1	.	.	.	.	.	.	.	.	
*Providence, R. I., High School . . . . .	1	1	.	.	.	.	1	.	1	
Ripon College, Wis. . . . .	.	.	.	.	.	.	.	.	1	
Riverview Academy, Poughkeepsie, N. Y. . . . .	.	.	1	1	.	.	2	2	.	
†Rochester, N. Y., Free Academy . . . . .	.	.	.	.	.	.	1	.	.	
Rochester, N. Y., Theological Seminary . . . . .	.	.	.	.	.	.	.	.	1	
*Romeo, Mich., High School . . . . .	.	.	.	.	.	.	.	1	.	
†Roxbury Latin School . . . . .	14	11	7	12	15	12	19	12	10	12
Rugby Academy, Philadelphia, Pa. . . . .	.	.	1	.	.	.	.	.	.	
Sachs' Collegiate Institute, New York . . . . .	.	1	4	1	3	1	2	8	2	
†St. Johnsbury, Vt., Academy . . . . .	1	.	.	1	1	.	.	.	1	
St. John's College, Fordham, N. Y. . . . .	.	1	.	.	.	.	.	.	.	
St. John's School, Manlius, N. Y. . . . .	.	.	.	.	2	.	.	.	.	
†St. John's School, Presque Isle, Me. . . . .	.	.	.	.	.	1	.	.	.	
St. John's School, Sing Sing, N. Y. . . . .	1	.	.	2	.	.	.	.	.	
St. Lawrence University, Canton, N. Y. . . . .	.	.	.	.	.	.	1	.	.	
†St. Mark's School, Southboro' . . . . .	3	5	4	1	1	6	4	3	3	5
*St. Paul, Minn., High School . . . . .	.	.	.	.	.	2	.	.	.	
†St. Paul's School, Concord, N. H. . . . .	4	5	9	7	2	5	10	12	8	12
St. Stephen's College, Annandale, N. Y. . . . .	1	.	.	.	.	.	.	.	.	
*Salem High School . . . . .	2	2	3	5	3	3	.	1	4	
*San Francisco, Cal., Boys' High School . . . . .	2	.	2	1	1	.	.	.	.	
School of the Lackawanna, Scranton, Pa. . . . .	.	1	.	.	.	.	.	.	.	
Shortlidge's Media Academy, Pa. . . . .	1	.	2	2	.	3	2	.	1	
Skaneateles, N. Y., Union School . . . . .	.	1	.	.	.	.	.	.	.	
Smith Academy, St. Louis, Mo. . . . .	1	.	.	1	1	1	1	2	.	
*Somerville High School . . . . .	3	3	6	2	3	4	5	5	5	3
Southwestern Presb. Univ., Clarksville, Tenn. . . . .	.	.	.	1	.	.	.	.	.	
*Springfield High School . . . . .	.	.	.	.	.	.	.	.	2	
*Springfield, Ill., High School . . . . .	.	.	.	.	.	.	1	.	.	
Spring Hill College, near Mobile, Ala. . . . .	.	.	1	.	1	.	.	.	.	
State College of Kentucky, Lexington, Ky. . . . .	1	.	.	.	.	.	.	.	.	
State University of Iowa, Iowa City . . . . .	1	1	.	.	.	.	.	1	.	
Stewart Academy, Reading, Pa. . . . .	.	1	.	.	.	.	.	.	.	
Swarthmore College, Pa. . . . .	1	1	.	.	.	.	1	1	.	
*Syracuse, N. Y., High School . . . . .	.	.	.	.	.	1	.	.	.	
Syracuse University, N. Y. . . . .	.	.	1	.	.	1	.	.	.	
Tabor Academy, Marion . . . . .	.	.	1	.	.	.	.	1	.	
*Taunton High School . . . . .	.	2	2	.	.	.	2	.	.	
†Thayer Academy, South Braintree . . . . .	.	4	1	.	1	.	.	.	.	
Trinity College, Hartford, Conn. . . . .	2	.	1	.	.	.	.	1	.	
Trinity School, Tivoli, N. Y. . . . .	.	.	.	.	1	.	.	.	.	
*Troy, N. Y., High School . . . . .	.	.	.	1	1	.	.	.	.	
Tufts College, College Hill . . . . .	1	.	.	.	.	1	.	1	1	
†Union Academy, Belleville, N. Y. . . . .	.	.	.	.	.	.	.	.	1	

	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Université de France . . . . .	1									1
University Grammar School, Providence, R. I. . . . .										1
University of Alabama, Ala. . . . .										1
University of California, Berkeley, Cal. . . . .	1						1			2
University of Chicago, Ill. . . . .			1							
University of Cincinnati, O. . . . .			1							
University of the City of New York . . . . .		1								1
University of Des Moines, Iowa . . . . .		1								
University of Georgia, Athens, Ga. . . . .							1			
University of Illinois, Champaign, Ill. . . . .				1						
University of Kansas, Lawrence, Kan. . . . .										3
University of Michigan, Ann Arbor, Mich. . . . .				3	2	1		2		
University of New Brunswick, Fredericton, N. B. . . . .							1		2	
University of Oregon, Eugene City, Ore. . . . .							1			
University of Pennsylvania, Philadelphia, Pa. . . . .	1		1	1	1	1		1		
University of Rochester, N. Y. . . . .		1	2			1	1			
University of State of Missouri, Columbia, Mo. . . . .									1	
University of Tennessee, Knoxville, Tenn. . . . .			1							
University of Vermont, Burlington, Vt. . . . .							1			
University of Virginia, Va. . . . .							1			
University of Wisconsin, Madison, Wis. . . . .				1						
University of Wooster, O. . . . .									2	
University School, Chicago, Ill. . . . .			2	2			3			
University School, Petersburg, Va. . . . .				1						
University School, San Francisco, Cal. . . . .	2									
Urban School, San Francisco, Cal. . . . .		3	1			2			1	
Utica, N. Y., Academy . . . . .	1		1	1						
Vanderbilt University, Nashville, Tenn. . . . .									2	
†Vermont Academy, Saxton's River, Vt. . . . .				1						
†Vermont Episcopal Institute, Burlington, Vt. . . . .		1	1	1						
*Wakefield High School . . . . .								1		
*Waltham High School . . . . .	1					1			1	
Warsaw, N. Y., Union School . . . . .		2			1					
Washburn College, Topeka, Kan. . . . .									1	
*Washington, D. C., High School . . . . .									2	
*Washington Co., Vt., Grammar Sch., Montpelier . . . . .					1					
Washington University, St. Louis, Mo. . . . .	1				1	1				
*Watertown High School . . . . .									1	
*Wellesley High School . . . . .									1	
Wesleyan University, Middletown, Conn. . . . .	3		1						2	
†Western Reserve Academy, Hudson, O. . . . .							1			
*Westfield High School . . . . .	1									
West Newton English and Classical School . . . . .					2		1			
White & Sykes, Franklin School, Cincinnati, O. . . . .		1	4		3	2	3	2	3	
William Jewell College, Liberty, Mo. . . . .			1							
†William Penn Charter School, Philadelphia, Pa. . . . .					1		1	1	3	
Williams College, Williamstown . . . . .				1		1				
†Williston Seminary, East Hampton . . . . .	3				4					1
Wilson and Kellogg, Private School, New York . . . . .	1	1	3	1	2		1	2	2	
*Winchester High School . . . . .						1		1		
*Winsted, Conn., High School . . . . .								1		
*Woburn High School . . . . .		1				2		1		
*Woonsocket, R. I., High School . . . . .	1									
†Worcester Academy . . . . .	1			2	1				1	2
*Worcester High School . . . . .	1	3	1	1	2	2	1	3	4	
†Worcester Polytechnic Institute . . . . .							1		1	
Yale College, New Haven, Conn. . . . .	2			1		1			2	
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